

**Tillbridge Solar Project
EN010142**

**Applicant's Responses to Relevant
Representations**

Document Reference: EN010142/APP/9.1

**Planning Act 2008
The Infrastructure Planning (Examination Procedure) Rules 2010**

**October 2024
Revision Number: 00**

Table of Contents

1.	Introduction	4
1.1	Purpose of this document	4
1.2	Structure of this document	4
2.	Applicant's Responses to Relevant Representations.....	9
2.1	Statutory Consultees	9
2.2	Local Authorities	84
2.3	Parish Councils.....	131
2.4	Non-Statutory Organisations.....	192
2.5	Persons with an Interest in the Land (PIL).....	235
2.6	Public Comments.....	264
	Air Quality	264
	Climate change.....	265
	Cultural Heritage.....	266
	Ecology and Biodiversity.....	266
	Flood Risk, Drainage and Water Environment.....	267
	Human Health.....	269
	Landscape and Visual Amenity.....	271
	Noise and Vibration – General Comments.....	274
	RR-014 – Specific Comments (primarily relating to Noise and Vibration).....	275
	Socio Economics and Land Use.....	283
	Soils and Agriculture	285
	Transport and Access	288
	Materials and Waste	290
	Other Environmental Topics.....	291
	Cumulative Effects and Interactions.....	292
	Environmental Impact Assessment.....	296
	Scheme Design and Site Selection.....	297
	Planning.....	301
	Funding.....	304
	Safety.....	305
	Consultation and Engagement.....	308
	Decommissioning	311
3.	References	312
	Appendix A Waste Quantitative Cumulative Assessment	314
	Appendix B Report on Cumulative Impacts of Solar Projects on BMV Land in Lincolnshire	315
	Appendix C Tillbridge Solar Project Acoustics Technical Note	316
	Appendix D Report on the DCO Process	317
	Appendix E UK Food Security Report from DEFRA (2021).....	318

Tables

Table 1-1. List of Statutory Consultees who submitted Relevant Representations.....	5
Table 1-2. List of Local Authorities who submitted Relevant Representations.....	5
Table 1-3. List of Parish Council's who submitted Relevant Representations	6
Table 1-4. List of Non-Statutory Organisations who submitted Relevant Representations	6
Table 1-5. List of People's with an Interest in the Land that submitted Relevant Representations	6
Table 1-6. Abbreviations	7
Table 2-1. Applicant's Responses to Relevant Representations – Statutory Consultees	9
Table 2-2. Applicant's Responses to Relevant Representations – Local Authorities	84
Table 2-3. Applicant's Responses to Relevant Representations – Land Interests	131
Table 2-4. Applicant's Responses to Non-Statutory Organisations.....	192
Table 2-5. Applicant's Responses to Relevant Representations – PIL	235
Table 2-6: Applicants Responses to Public Relevant Representations relating to Air Quality	264
Table 2-7: Applicants Responses to Public Relevant Representations relating to Climate Change	265
Table 2-8: Applicants Responses to Public Relevant Representations relating to Cultural Heritage	266
Table 2-9: Applicants Responses to Public Relevant Representations relating to Ecology and Biodiversity	266
Table 2-10: Applicants Responses to Public Relevant Representations relating to Flood Risk, Drainage and Water Environment	267
Table 2-11: Applicants Responses to Public Relevant Representations relating to Human Health	269
Table 2-12: Applicants Responses to Public Relevant Representations relating to Landscape and Visual Amenity	271
Table 2-13: Applicants Responses to Public Relevant Representations relating to Noise and Vibration – General Comments	274
Table 2-14: Applicants Responses to RR-014 – Specific Comments (primarily relating to Noise and Vibration).....	275
Table 2-15: Applicants Responses to Public Relevant Representations relating to Socio Economics and Land Use	283
Table 2-16: Applicants Responses to Public Relevant Representations relating to Soils and Agriculture.....	285
Table 2-17: Applicants Responses to Public Relevant Representations relating to Transport and Access.....	288
Table 2-18: Applicants Responses to Public Relevant Representations relating to Materials and Waste.....	290
Table 2-19: Applicants Responses to Public Relevant Representations relating to Other Environmental Topics	291
Table 2-20: Applicants Responses to Public Relevant Representations relating to Cumulative Effects and Interactions	292
Table 2-21: Applicants Responses to Public Relevant Representations relating to the Environmental Impact Assessment	296
Table 2-22: Applicants Responses to Public Relevant Representations relating to the Scheme Design and Site Selection	297
Table 2-23: Applicants Responses to Public Relevant Representations relating to Planning	301

Table 2-24: Applicants Responses to Public Relevant Representations relating to Funding	304
Table 2-25: Applicants Responses to Public Relevant Representations relating to Safety	305
Table 2-26: Applicants Responses to Public Relevant Representations relating to Consultation and Engagement	308
Table 2-27: Applicants Responses to Public Relevant Representations relating to Decommissioning	311

1. Introduction

1.1 Purpose of this document

- 1.1.1 The purpose of this report is to provide Tillbridge Solar Limited's (the Applicant) response to the key issues raised in Relevant Representations (RRs) submitted by Interested Parties (IPs) in relation to the Tillbridge Solar Project (the Scheme).
- 1.1.2 The Development Consent Order (DCO) application (the Application) for the Scheme was submitted on 10 April 2024 and accepted for Examination on 08 May 2024. The period when IPs could submit RRs on the Application was from 13 June 2024 to 01 August 2024. The RRs received were published on the Planning Inspectorate's project website on 9 August 2024.
- 1.1.3 A total of 332 responses were received during the RR period.
- 1.1.4 Following the RR period, one more response was received and accepted at the discretion of the ExA, which has been incorporated below into **Table 2-6: Public** responses which are themed.
- 1.1.5 A further eight written submissions were submitted as part of Procedural Deadline A, along with three additional responses following the deadline for Procedural Deadline A which were accepted at the discretion of the ExA. These comments and the Applicants response to these have also been incorporated into **Table 2-6: Public** responses below.

1.2 Structure of this document

- 1.2.1 This report provides a response from the Applicant to the matters raised in the RRs and is structured as follows:
 - a. **Table 2-1: Statutory Consultees:** the Applicant's responses to relevant representations from Statutory Consultees, who are listed in Table 1-1 below.
 - b. **Table 2-2: Local Authorities:** the Applicant's responses to relevant representations from Local Authorities, who are listed in Table 1-2 below.
 - c. **Table 2-3: Parish Councils:** the Applicant's responses to relevant representations from Parish Councils, who are listed in Table 1-3 below.
 - d. **Table 2-4: Non-Statutory Organisations:** the Applicant's responses to relevant representations from Non-Statutory Organisations, who are listed in Table 1-4 below.
 - e. **Table 2-5: Persons with an Interest in the Land:** the Applicant's responses to relevant representations from Persons with Interest in the Land, who are listed in Table 1-5 below.
 - f. **Table 2-6 to Table 2-27: Public:** the Applicant's responses to relevant representations from the Public, organised into themes.
- 1.2.2 RRs received by Statutory Consultees, Local Authorities, Parish Councils, Non-Statutory Organisations and Persons with an Interest in the Land are presented as verbatim text taken from Relevant Representations are then responded to by setting out the Applicant's position on the matter at the time of writing.

- 1.2.3 To increase the conciseness of this document similar points from the Public have been grouped together and summarised. The reference number column in the tables below refers to the reference given to the RRs in the Examination Library.
- 1.2.4 The documents submitted with the Application are also referenced in this document, using the reference number given in the ExA's Examination Library is used (e.g. **[APP-XXX]**, or **[AS-XXX]**) where a document which has previously been submitted is referenced, or the Applicant's reference number (e.g. **[EN010142/APP/XX(RevX)]**) where a new document is being submitted. All documents are also presented in numerical order in the **Guide to the Application [EN010142/APP/1.2(Rev03)]**.

Table 1-1. List of Statutory Consultees who submitted Relevant Representations

RR Reference Number	Statutory Consultee
Prescribed Consultees	
RR-208	Natural England
RR-036	Canal and River Trust
RR-117	Historic England
RR-093	Environment Agency
RR-177	Marine Management Organisation
RR-317	UK Health Security Agency
RR-207	National Highways
RR-035	Cadent Gas
RR-021	Anglian Water
RR-097	Forestry Commission
RR-316	Trent Valley Internal Drainage Board
RR-111	GTC Pipelines Ltd (GTC Pipelines Ltd)
RR-080	CMS Cameron McKenna Nabarro Olswang LLP on behalf of EDF Energy (Thermal Generation) Limited
RR-211	Addleshaw Goddard LLP on behalf of Network Rail Infrastructure Limited
RR-324	Weightmans LLP on behalf of Northern Powergrid (Yorkshire) Plc
RR-206	National Grid Electricity Transmission plc

Table 1-2. List of Local Authorities who submitted Relevant Representations

RR/Examination Reference Number	Local Authority
RR-165	Lincolnshire County Council
RR-328	West Lindsey District Council
RR-212	Newark and Sherwood District Council

Table 1-3. List of Parish Council's who submitted Relevant Representations

RR/Examination Reference Number	Persons with Interest in the Land
RR-292	Stow Parish Council
RR-095	Fillingham Parish Meeting
RR-284	Springthorpe Parish Meeting
RR-109	Glentworth Parish Council
RR-293	Sturton by Stow Parish Council
RR-318	Upton Parish Council
RR-033	Broxholme Parish meeting Solar Group

Table 1-4. List of Non-Statutory Organisations who submitted Relevant Representations

RR/Examination Reference Number	Non-Statutory Organisation
RR-303	The New Community Energy Company (NCEC)
RR-057	Cottam Solar Project Limited
RR-327	West Burton Solar Project Limited
RR-103	Gate Burton Solar Project Limited
RR-094	Fenwick Solar Farm Action Group
RR-001	7000 Acres

Table 1-5. List of People's with an Interest in the Land that submitted Relevant Representations

RR/Examination Reference Number	Non-Statutory Consultee
RR-214 and RR-091	Nicholas Hill and Emma Ruth Hill
RR-221	Nimesh Dhokia
RR-139 and RR-276	John Rapley and Shelley Rapley
RR-078	Dr Terence David Organ
RR-307	Timothy Robert Elwess
RR-013	Alison Rachel Elwess
RR-062	David Andrew Elwess
RR-068	Deborah Elwess
RR-089	Elizabeth Scott
RR-209	Elizabeth Scott on behalf of Neil Scott
RR-169	Lorraine Broadbent
RR-259	Robyn Eleanor Broughton
RR-063	David Broadbent
RR-283	Sophie Dhokia
RR-322	Victoria Elwess

1.2.5 For ease of reference, a table of acronyms used in this document is provided in **Table 1-6**. Abbreviations of this document.

Table 1-6. Abbreviations

Abbreviation	Definition
AA	Appropriate Assessment
AIA	Arboricultural Impact Assessment
AIL	Abnormal Indivisible Loads
ALC	Agricultural Land Classification
BDC	Bassetlaw District Council
BMV	Best and Most Versatile Land
BNG	Biodiversity Net Gain
BPM	Best Practicable Means
CEMP	Construction Environmental Management Plan
CCTV	Closed Circuit Television
CTMP	Construction Traffic Management Plan
DAS	Design and Access Statement
DBA	Desk Based Assessment
DCO	Development Consent Order
DEMP	Decommissioning Environmental Management Plan
EA	Environment Agency
EIA	Ecological Impact Assessment
ES	Environmental Statement
EMP	Electro Magnetic Fields
FRA	Flood Risk Assessment
GW	Gigawatt
ha	Hectares
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
HRA	Habitats Regulation Assessment
IDB	Independent Drainage Board
IPs	Interested Parties
LCC	Lincolnshire County Council
LEMP	Landscape and Ecological management Plan
LHA	Local Highway Authority
LIR	Local Impact Report
LOAEL	Lowest Observed Adverse Effect Level
LVIA	Land and Visual Impact Assessment
LWS	Local Wildlife Site
MW	Megawatt
NCC	Nottinghamshire County Council
NGET	National Grid Electricity Transmission plc
NPPF	National Planning Policy Framework

Abbreviation	Definition
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
OEMP	Operational Environmental Management Plan
PA	Planning Act 2008
PEI	Preliminary Environmental Information
PINS	Planning Inspectorate
PROW	Public Right of Way
PV	Photovoltaic
RR	Relevant Representation
SAC	Special Area of Conservation
SMP	Soil Management Plan
SoCG	Statement of Common Ground
SRN	Strategic Road Network
SPA	Special Protection Area
SSCEP	Skills, Supply Chain and Employment Plan
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
WLDC	West Lindsey District Council

2. Applicant's Responses to Relevant Representations

2.1 Statutory Consultees

Table 2-1. Applicant's Responses to Relevant Representations – Statutory Consultees

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-208	Natural England	Summary of matters in Relevant Representation, specifically concerns to Internationally Designated Sites and Soils & BMV	<p>Summary of Natural England's advice</p> <p>Overall Natural England are satisfied that the proposals address the majority of potential impacts to the natural environment. The only areas of concern where we consider further assessment and / or information is required to the Examining Authority to make an informed decision are Internationally Designated Sites and Soils & Best and Most Versatile (BMV) Agricultural Land.</p> <p>Key concerns regarding Internationally Designated Sites:</p> <ul style="list-style-type: none"> • In-combination effects with other large scale solar farms • Impacts to passage and wintering birds using functionally linked land • Impacts from pollutants during construction including silt and bentonite <p>Key concerns regarding Soils & BMV:</p> <ul style="list-style-type: none"> • A full Agricultural Land Classification (ALC) survey has not been conducted to include the cable corridor to inform the Soil Management Plan (SMP) • Losses of >20ha should be deemed significant, with areas of permanent infrastructure and elements defined and mapped. • The inclusion of the SMP is welcomed. It should be robust with key mitigation, roles, responsibilities and procedures defined as outlined in Table 1. <p>Our full advice has been emailed to tillbridgesolarproject@planninginspectorate.gov.uk.</p>	The Applicant notes this comment and provides responses in full below.
RR-208	Natural England	Habitats Regulations Assessment – Screening of Humber Estuary Ramsar effects on Golden plover	<p>NE1</p> <p>Internationally designated sites</p> <ul style="list-style-type: none"> • Humber Estuary Ramsar <p>Screening of designated features of the Ramsar Construction (C), Operation (O), Decommissioning (D).</p> <p>Appendix 9-12, section 4.2 - The Humber Estuary Ramsar is designated for bird species including passage and wintering Golden plover. Golden plover can travel 15-20km, using surrounding land for functional purposes such as foraging. The Scheme is just on the 20km limit from the Ramsar boundary. There is no assessment of the Humber Estuary Ramsar in the Habitats Regulations Assessment (HRA) for land used by Golden plover for functional purposes.</p>	Section 4.3 of Appendix 9-12: Habitats Regulations Assessment Report of the Environmental Statement [EN010142/APP/6.2(Rev01)] has been updated to address this comment and a revised version of the document is submitted into the examination at Deadline 1. Further justification for screening out the Humber Estuary Ramsar from the Appropriate Assessment has been provided.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>There needs to be justification for screening out the internationally designated site from Appropriate Assessment.</p> <p>Where any land affected by the Scheme is frequently used by >1% of designated site population, or is frequently used by <1%, then the Ramsar should be scoped in for further assessment for impacts to Golden plover as a designated feature.</p> <p>Further information required to assess impacts to designated features of the Ramsar site. Impacts should be considered alone and in-combination.</p>	
RR-208	Natural England	Habitats Regulations Assessment - Great North Road Solar Park and One Earth Solar Farm	<p>NE2</p> <p>Internationally designated sites</p> <ul style="list-style-type: none"> • Humber Estuary SAC • Humber Estuary Ramsar <p>Consideration of in-combination effects (C), (O), (D)</p> <p>Appendix 9-12, Table 8 - The Scheme has outlined projects for consideration of in-combination effects as part of the HRA. Natural England suggest the inclusion of Great North Road Solar Park and One Earth Solar Farm within this assessment. This should include all identified impact pathways in the HRA and those discussed below. Include the aforementioned solar projects in the HRA in-combination analysis.</p>	<p>Table 8 in Appendix 9-12: Habitats Regulations Assessment Report of the Environmental Statement [EN010142/APP/6.2(Rev01)] has been updated to address this comment and a revised version of the document is submitted into the examination at Deadline 1. Table 8 now includes consideration of in-combination effects with Great North Road Solar Park and One Earth Solar Farm.</p>
RR-208	Natural England	Habitats Regulations Assessment – Consideration of construction pollutant management impacts to migratory fish	<p>NE3</p> <p>Internationally designated sites</p> <ul style="list-style-type: none"> • Humber Estuary SAC • Humber Estuary Ramsar <p>Consideration of construction pollutant management impacts to migratory fish (C), (D)</p> <p>Appendix 9-12, section 5.2 - Construction pollutants, such as silt, are a key impact pathway that could cause direct harm to river and sea lamprey migrating along River Trent from the Humber Estuary SAC / Ramsar. For example, creating a barrier to migration and / or smothering gravel beds which may be used as breeding habitat. This impact pathway is not considered within the HRA, as such no screening for further assessment has been undertaken.</p> <p>7.8 Framework Construction Environment Management Plan, Table 3-5 - Natural England are pleased to see that a Silt Management Plan will be included within the detailed Construction Environment Management Plan (CEMP) as a requirement of the DCO. Where this is relied upon to avoid impacts to Lamprey, this must be clearly set out within the HRA.</p>	<p>Section 5.2 of Appendix 9-12: Habitats Regulations Assessment Report of the Environmental Statement [EN010142/APP/6.2(Rev01)] has been updated to address this comment and a revised version of the document is submitted into examination at Deadline 1. This includes consideration of impact pathways arising from construction pollutants, such as silt.</p> <p>A Silt Management Plan will be included within the detailed CEMP, as set out within the Framework CEMP [EN010142/APP/7.8 (Rev01)]. This is secured by Requirement 12 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], which requires the detailed CEMP(s) to be in substantial accordance with the Framework CEMP.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>Include the screening of impacts to river and sea lamprey from construction silt within the HRA. Consider impacts alone and in-combination.</p> <p>Include the Silt Management Plan within the detailed CEMP, as part of a requirement of the DCO.</p>	
RR-208	Natural England	Habitats Regulations Assessment – Consideration of bentonite management impacts to migratory fish	<p>NE4</p> <p>Internationally designated sites</p> <ul style="list-style-type: none"> • Humber Estuary SAC • Humber Estuary Ramsar <p>Consideration of bentonite management impacts to migratory fish (C)</p> <p>Appendix 9-12, section 5.2 – There is no consideration of potential impacts to river and sea lamprey from bentonite leakages, as used within Horizontal Directional Drilling (HDD) techniques.</p> <p>7.8 Framework Construction Environment Management Plan, Table 3-5 - Natural England are pleased to see that any leakage of bentonite from HDD is considered for impacts to the environment. We would expect to see a Bentonite Management Plan included within the detailed CEMP.</p> <p>Include the screening of impacts to river and sea lamprey from bentonite used in HDD within the HRA. Consider impacts alone and in-combination.</p> <p>Include a Bentonite Management Plan within the detailed CEMP, as part of a requirement of the DCO.</p>	<p>Section 5.2 of Appendix 9-12: Habitats Regulations Assessment Report of the Environmental Statement [EN010142/APP/6.2(Rev01)] has been updated to address this comment and a revised version of the document is submitted into examination at Deadline 1.</p> <p>With the commitment to ensure HDD is a minimum depth of 5 m beneath the riverbed, it is considered that risks associated with bentonite leakage are minimal. The minimum depth of the HDD is set out within the Outline Design Principles Statement [AS-058]. Compliance with a detailed Design Principles Statement which will be substantially in accordance with the outline statement is secured through Requirement 5 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>Further assessment has been provided within Section 5.2 of Appendix 9-12: Habitats Regulations Assessment Report of the Environmental Statement [EN010142/APP/6.2(Rev01)] of the potential effects on river and sea lamprey, and on other fish species.</p> <p>The Framework CEMP [EN010142/APP/7.8 (Rev01)] includes the requirement for a site specific fracture assessment to be prepared, which would define the management measures for bentonite based on local ground conditions. Further measures for pollution prevention and control of bentonite are also set out within the Framework CEMP [EN010142/APP/7.8 (Rev01)]. This is secured by Requirement 12 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>HRA1</p>
RR-208	Natural England	Habitats Regulations Assessment – Consideration of construction noise and visual disturbance impacts to migratory fish	<p>NE5</p> <p>Internationally designated sites</p> <ul style="list-style-type: none"> • Humber Estuary SAC • Humber Estuary Ramsar <p>Consideration of construction noise and visual disturbance impacts to migratory fish (C), (D)</p> <p>Appendix 9-12, section 5.2 – Impacts to river and sea lamprey from construction noise and visual disturbance have been considered and screened out from the Scheme. Natural England agrees with this assessment. No further comments</p>	<p>The Applicant notes this comment.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-208	Natural England	Habitats Regulations Assessment – Consideration of EMF barrier impacts to migratory fish	<p>NE6</p> <p>Internationally designated sites</p> <ul style="list-style-type: none"> • Humber Estuary SAC • Humber Estuary Ramsar <p>Consideration of EMF barrier impacts to migratory fish (O)</p> <p>Appendix 9-12, section 5.3 – We note the evidence of EMF impacts on migrating river and sea lamprey is limited. We acknowledge the discussion provided within section 5.3. The conclusion of the screening report outlines no Likely Significant Effects from barriers to movement of qualifying fish from the Scheme, primarily due to the burying of cables at a depth of at least 5m from the river bed.</p> <p>Natural England concur, based on the information provided, that a precautionary approach has been taken, via the implementation of the minimum cable burial depth, and impacts to migratory lamprey as a result of EMF from the cable crossing are unlikely. Nonetheless, we would welcome clarity on the rationale behind the use of a 5m burial depth for the River Trent Cable Crossing.</p> <p>We also note the opportunity posed by this development to help to fill the evidence gaps on this subject; would welcome a commitment within the DCO to monitor the effect of EMF from the cable crossing on migratory lamprey & other species.</p> <p>Clarity should be provided on the rationale behind the use of a 5m burial depth for the River Trent Cable Crossing.</p>	<p>The Outline Design Principles Statement [AS-058] includes the following design principle:</p> <p><i>“For sensitive watercourses, the minimum depth is 3m and maximum depth is 5m. This is with the exception of the River Till and the River Trent where cables will be installed at a minimum of 5m below the lowest surveyed point of the riverbed to prevent disturbance to fish species, and a maximum depth of 25m, depending on the ground investigation results.”</i></p> <p>The Applicant has adopted the above design principle for HDD depth below the River Trent in accordance with the agreed position with Natural England, Environment Agency and Canal and River Trust for the consented Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133]. The minimum depth has been specified in consultation with the Canal and River Trust to avoid the mobilisation of silt from the riverbed which could have potentially detrimental impacts on ecology and the navigational safety of the River Trent. This agreement is outlined within the Canal and Rivers Trust SoCG [EN010142/APP/9.20]. A ground investigation and tidal riverbed survey will be undertaken prior to the works under the River Trent to confirm the final design, as set out within the Framework CEMP [EN010142/APP/7.8 (Rev01)].</p> <p>The Framework OEMP [EN010142/APP/7.9(Rev01)] has been updated at Deadline 1 to confirm that the Applicant will contribute to the monitoring of EMF within the River Trent, as agreed with the other solar developers, subject to an agreement of the feasibility and extent of such monitoring programme within the River Trent with the Environment Agency and Natural England.</p>
RR-208	Natural England	Assessment of effect pathways in Environmental Statement relating to SSSIs	<p>NE7</p> <p>Nationally designated sites</p> <ul style="list-style-type: none"> • Ashton’s Meadow SSSI <p>Conclusion of impact pathways from the Scheme to the SSSI (C), (O), D)</p> <p>Chapter 9, Section 9.6.8 – notes no ecological or hydrological connections to the SSSI from the Scheme. Natural England agree with this conclusion.</p> <p>No further comments</p>	<p>The Applicant notes this comment.</p>
RR-208	Natural England	Assessment of impacts to bats in the ES	<p>NE8</p> <p>Protected species</p> <ul style="list-style-type: none"> • Bats <p>(C)</p>	<p>As set out within Table 3-4 of the Framework CEMP [EN010142/APP/7.8 (Rev01)], pre-construction surveys will be undertaken to validate and, where necessary, update the baseline ecology survey findings. The purpose of these pre-construction surveys is to ensure mitigation during the construction phase is based on the latest protected species information. This will also be required for any protected species licensing</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>Following review of the information within the documents as referenced above, Natural England has no significant concerns with respect to the approach to bats based on the currently presented information. We welcome the approach to avoid impacts to bats as far as practicable.</p>	<p>that may be identified as being necessary at detailed design stage. At this stage no protected species licenses for bats are anticipated to be required. Further measures to avoid impacts on bats are set out within Table 3-4 of the Framework CEMP [EN010142/APP/7.8 (Rev01)].</p>
			<p>However, should impacts to bats and/or their habitats become likely following further survey effort during pre-construction surveys, or, as a result of changes to the scheme boundaries, then the current level of survey undertaken to determine bat presence and activity in areas within or associated with the Order limits for the scheme would be insufficient to support a licence application.</p>	
			<p>Although the desk and field survey data indicate likely presence of roosts within or close to the Order limits for several species (Common Pipistrelle <i>Pipistrellus pipistrellus</i> and Soprano Pipistrelle <i>Pipistrellus pygmaeus</i>, Noctule <i>Nyctalus noctula</i>, Leisler's bat <i>Nyctalus leisleri</i>, Myotis species (e.g. Daubenton's <i>Myotis daubentonii</i> or Natterer's <i>Myotis nattereri</i>) and Brown Long-eared <i>Plecotus auritus</i>), the assumed presence of these species is based on assessments of suitable habitat features and observational data only. Additional survey effort would likely be required, including climbing to allow for the inspection for roosting bats or potential roost features (PRFs) of any trees where assessing roost potential from the ground has been constrained if those trees are to be removed during works. Given that many of the species identified during previous survey effort are all associated with roosting in trees, Natural England would require further survey effort to provide greater confidence in the species of bats and roost types to be impacted by potential works as part of a licence application.</p>	
			<p>If additional survey effort is not possible due to access issues or any other appropriate reason, further justification and evidence could be gained through additional emergence surveys to support the wider impact assessment. Alternatively, appropriate discussion and justification as to why the existing survey effort is sufficient to inform the impact assessment may be acceptable.</p>	
			<p>Natural England do not require any further information as it stands. However, should changes to the project design and/or species distribution occur post consent, to the point where impacts to protected species can no longer be avoided, Natural England should be contacted as soon as possible for further input and advice. The provision of draft licence applications to Natural England for review and commentary, and if appropriate, the subsequent provision</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-208	Natural England	Assessment of impacts to badgers in the ES	<p>of a Letter of No Impediment, should be considered as a means to early resolution of any species issues that require licensing resolution.</p> <p>NE9 Protected species</p> <ul style="list-style-type: none"> • Badgers <p>(C)</p> <p>Natural England has no significant comments with respect to the project's approach to badgers and their setts associated within or in close proximity to the Order limits for the scheme. Natural England welcomes the design of the scheme to avoid all impacts to known badger setts, and the proposal to establish appropriate exclusion zones around setts to prevent disturbance and accidental damage. Should there be any changes to the Order limits and/or design of the scheme, or, should badger distribution within the Order limits change, and impacts to setts can no longer be avoided, Natural England should be contacted as soon as possible to discuss any potential need for a protected species licence.</p> <p>Natural England do not require any further information as it stands. Should changes to the project design and/or species distribution occur to the point where impacts to protected species can no longer be avoided, Natural England should be contacted as soon as possible for further input and advice.</p> <p>The provision of draft licence applications to Natural England for review and commentary, and if appropriate, the subsequent provision of a Letter of No Impediment, should be considered as a means to early resolution of any species issues that require licensing resolution. Conditions and requirements relating to badgers, and any required mitigation and compensation, would be secured as part of an appropriated protected species licence issued by Natural England, if required.</p>	<p>As set out within Table 3-4 of the Framework CEMP [EN010142/APP/7.8 (Rev01)], pre-construction surveys will be undertaken to validate and, where necessary, update the baseline ecology survey findings. The purpose of these pre-construction surveys is to ensure mitigation during the construction phase is based on the latest protected species information. This will also be required for any protected species licensing that may be identified as being necessary at detailed design stage. At this stage no badger licenses are anticipated to be required.</p> <p>Further measures to avoid impacts on badgers are set out within Table 3-4 of the Framework CEMP [EN010142/APP/7.8 (Rev01)].</p>
RR-208	Natural England	Assessment of impacts to Great Crested Newts in the ES	<p>NE10 Protected species</p> <ul style="list-style-type: none"> • Great Crested Newts <p>(C)</p> <p>We welcome the overall approach of avoidance of impacts to Great Crested Newts.</p> <p>Nonetheless, we would highlight that relying on eDNA and HSI assessments only as means of identifying great crested newt presence within the habitats within an area can typically carry a greater risk of missing some populations or individual newts than the</p>	<p>As set out within Table 3-4 of the Framework CEMP [EN010142/APP/7.8 (Rev01)], pre-construction surveys will be undertaken to validate and, where necessary, update the baseline ecology survey findings. The purpose of these pre-construction surveys is to ensure mitigation during the construction phase is based on the latest protected species information. This will also be required for any protected species licensing that may be identified as being necessary at detailed design stage. At this stage no protected species licenses for great crested newt are anticipated to be required.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>risk that might be expected where traditional survey techniques using torching, egg searches and bottle trapping are to be used. The potential for the unexpected discovery of great crested newts within the Order limits should be acknowledged, and should this occur, Natural England should be contacted as soon as possible to discuss the potential need for a protected species licence.</p> <p>Where the scheme is seeking to employ Reasonable Avoidance Measures (RAMs) as part of a precautionary and non-licensed approach, every effort should be made to ensure that habitats to be impacted are managed appropriately via habitat manipulation to ensure that these habitats remain unsuitable for GCN between the point at which habitat management occurs and when construction activities begin. If great crested newts are found to be within impact areas for the scheme in future, either because further, pre-construction surveys have identified their presence within impact zones, or because the scheme design has changed such that impacts to already known newt habitats are now likely, Natural England should be contacted to discuss a licensable approach, most likely via the EPS Mitigation licence route. Should a licence be required, further and updated survey effort beyond eDNA and HSI assessment results will in all likelihood be required to support a licence application and licensed approach.</p> <p>Natural England do not require any further information as it stands. Should changes to the project design and/or species distribution occur to the point where impacts to protected species can no longer be avoided, Natural England should be contacted as soon as possible for further input and advice.</p> <p>The provision of draft licence applications to Natural England for review and commentary, and if appropriate, the subsequent provision of a Letter of No Impediment, should be considered as a means to early resolution of any species issues that require licensing resolution. Conditions and requirements relating to great crested newts, and any required mitigation and compensation, would be secured as part of an appropriated protected species licence issued by Natural England, if required.</p>	<p>Further measures to avoid impacts on great crested newts are set out within Table 3-4 of the Framework CEMP [EN010142/APP/7.8 (Rev01)].</p>
RR-208	Natural England	Assessment of impacts to riparian mammals in the ES	<p>NE11 Protected species</p> <ul style="list-style-type: none"> • Riparian mammals <p>(C) Natural England has no significant comments with respect to riparian mammals. It is noted that the survey effort undertaken thus far has</p>	<p>As set out within Table 3-4 of the Framework CEMP [EN010142/APP/7.8 (Rev01)], pre-construction surveys will be undertaken to validate and, where necessary, update the baseline ecology survey findings. The purpose of these pre-construction surveys is to ensure mitigation during the construction phase is based on the latest protected species information. This will also be required for any protected species licensing that may be identified as being necessary at detailed design stage. At this</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>identified the presence of otters and water vole within the Cable Route Corridor but not within the Principal Site. Based on the current design of the scheme to avoid development impacts to running water and riparian habitats, a non-licensed approach to riparian mammals and drawing on avoidance measures and appropriate mitigation appears proportionate.</p> <p>It is also noted that the project does not currently predict the likely requirement of licences for otters or water vole, based on the current species distribution and scheme design. If either or both of these change and potential impacts to riparian mammals are identified that cannot be avoided, then Natural England should be contacted as soon as possible to discuss any need for protected species licences. Natural England do not require any further information as it stands. Should changes to the project design and/or species distribution occur to the point where impacts to protected species can no longer be avoided, Natural England should be contacted as soon as possible for further input and advice.</p> <p>The provision of draft licence applications to Natural England for review and commentary, and if appropriate, the subsequent provision of a Letter of No Impediment, should be considered as a means to early resolution of any species issues that require licensing resolution. Conditions and requirements relating to otters and/or water voles, and any required mitigation and compensation, would be secured as part of an appropriated protected species licence issued by Natural England, if required.</p>	<p>stage no protected species licenses for riparian mammals are anticipated to be required.</p> <p>Further measures to avoid impacts on riparian mammals are set out within Table 3-4 of the Framework CEMP [EN010142/APP/7.8 (Rev01)].</p>
RR-208	Natural England	Summary of matters related to Biodiversity Net Gain	<p>NE12 Biodiversity net gain (O) Biodiversity Net Gain is not mandatory for NSIPs until 2025. As such, the following comments are advisory.</p> <p>Volume 7 Biodiversity Net Gain Report, Section 4 - Natural England welcome the inclusion of the Biodiversity Net Gain report and the increases outlined for habitat units (64.55%), hedgerow units (17.33%) and watercourse units (22.94%).</p> <p>We would suggest a commitment via requirement to deliver a minimum of 10% BNG and that the gains outlined are secured along with a Habitat Management and Monitoring Plan via a requirement in the DCO.</p>	<p>The Applicant notes that the requirement to secure a minimum of 10% BNG does not yet apply to NSIPs. However, the Applicant is committed to delivering at least this level of BNG as part of the Scheme.</p> <p>The Applicant's commitment to delivering a minimum of 10% BNG is secured by both requirements 7 (landscape and ecological management plan) and 8 (biodiversity net gain) of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. Requirement 8 provides that construction cannot commence until a BNG strategy has been submitted and approved by the relevant planning authority, in consultation with the relevant statutory nature conservation body (being Natural England). The BNG strategy must be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)], which states at paragraph 4.6.2 that the Applicant is committed to achieving a minimum of 10% BNG, in accordance with the terms of the Biodiversity Net Gain Report [AS-062]. This approach is consistent with that adopted in the Gate Burton Energy Park Order 2024 [EN010131], which the Secretary of State</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-208	Natural England	Cable Corridor ALC Survey	<p>NE13 Soils and best and most versatile agricultural land Cable Corridor ALC Survey (C) Chapter 15, paragraphs 15.3.1-4 and paragraph 15.6.7 – Natural England advised in our previous s42 response (dated 10 July 2023) with regards to the requirements for survey within the cable corridor. We maintain our advice and add that to meet the requirements of NPPF 181 this work should be carried out pre consent to enable full assessment the proposal will have on Agricultural soils. The Grid Connection route has not been considered as part of this assessment therefore the ALC data is incomplete.</p> <p>Natural England would advise that for all areas of agricultural land subject to temporary and permanent loss, in which Post-1988 ALC survey information is not available, an ALC survey should be undertaken. The ALC surveys will identify the ALC grade, which can then be used to contribute to the masterplanning, so as to demonstrate the potential impacts on BMV agricultural land were minimised as far as practicable, as per the NPS EN-1, NPPF; and local planning policies, for example: Paragraph 5.10.8 (NPS EN-1) 'Applicants should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 3b, 4 and 5) except where this would be inconsistent with other sustainability considerations.'</p>	<p>(agreeing with the Examining Authority) confirmed is an appropriate mechanism for securing BNG (refer to paragraphs 4.13 and 7.4 of the Secretary of State's Decision Letter and paragraph 5.2.14 of the Examining Authority's Recommendation Report).</p> <p>Habitat management and monitoring measures are secured through the Framework LEMP [EN010142/APP/7.17(Rev02)], as set out within Sections 8.3 and 8.4 of the document. Requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)] provides that a Landscape and Ecological Management Plan must be submitted to and approved by the relevant planning authority (/authorities) before works can commence on the Scheme. The LEMP is required to be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)], meaning that the measures included in the Framework LEMP (must be reflected in the detailed Landscape and Ecological Management Plan(s).</p> <p>The Applicant is committed to undertaking a specific soil sampling of the Cable Route Corridor's eventual working area once detailed design has been undertaken.</p> <p>This commitment is detailed within Section 3.1 of the Framework Soil Management Plan (SMP) [EN010142/APP/7.12(Rev01)] and secured by Requirement 18 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], which provides that the detailed Soil Management Plan (SMP) must be substantially in accordance with the Framework SMP.</p> <p>The reason for this specific soil sampling instead of a detailed ALC survey of the entire Cable Route Corridor is because the eventual working corridor for the cable trench, within the current Cable Route Corridor area, will be significantly narrower than the current extent of the Order limits. A detailed ALC survey of the whole Cable Route Corridor, undertaken in accordance with standard industry practice (as detailed in Natural England's Technical Guidance Note 049 - Agricultural Land Classification: protecting the best and most versatile agricultural land (Ref 1-1)), would place sample points at 100m intervals and so could not be relied upon to provide good coverage of an eventual area of cable trenching works that is considerably narrower than 100m. Once the path of the cable trench is established during detailed design, soils data can be collected along this specific path giving superior soil data to inform the detailed SMP.</p> <p>Additionally, the Scheme is not proposing to use ALC grade to direct the path of the cable and trench. There is no loss or degradation of land resource as a result of the Cable Route Corridor construction, with the implementation of the measures set out within the Framework SMP [EN010142/APP/7.12(Rev01)]. The works comprise short-term temporary disturbance, following which the areas can continue to be in agricultural use with no likely effect on the use of BMV land. Additionally, this could</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>Furthermore, the ALC surveys can provide the necessary soil information to inform the detailed, site-specific Soil Management Plan, including identifying the appropriate mitigation measures needed.</p> <p>It is recognised that a large proportion of the agricultural land affected by the development will experience temporary land loss or disturbance and will be restored to the baseline ALC grade (largely as a result of the cable trenching). In order to both retain the long-term potential of this land and to safeguard all soil resources as part of the overall sustainability of the whole development, it is important that the soil is able to retain as many of its many important functions and services (ecosystem services) as possible. This can be achieved through careful soil management and appropriate, beneficial soil re-use, with consideration of how adverse impacts on soils and their functions can be avoided or minimised.</p> <p>Further information required from an ALC survey of the cable corridor pre-consent.</p>	<p>lengthen the cable route. If the Scheme was to go around an area of BMV, this would result in increased area and therefore increased disturbance to soil volume and all other sensitive receptors.</p> <p>This approach was also adopted and agreed between Natural England for the recently consented Gate Burton Energy Park [EN010131] (refer to the SoCG prepared with Natural England for Gate Burton (Ref 1-2)).</p> <p>The Applicant has been and continues to discuss this approach with Natural England for the Scheme, as presented within the Natural England SoCG [EN010142/APP/9.18].</p>

RR-208	Natural England	Significance criteria for BMV land effects in the ES	<p>NE14 Soils and best and most versatile agricultural land Categorising of significance of BMV (C), (O), (D) Chapter 15, paragraph 15.4.21- Natural England note development that has or could potentially lead to the permanent loss of more than 20ha of Best and Most Versatile Agricultural land is 'significant'. Ensure permanent losses of >20ha BMV are considered as significant.</p>	<p>As set out within Section 15.8 of Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the Scheme will not result in the permanent loss of an area of greater than or equal to 20ha Best and Most Versatile (BMV) Land.</p> <p>The Applicant submitted a Change Request application at the end of September 2024 which was accepted on 24 October 2024 and reduced the overall area of the Principal Site by approximately 5ha. The areas excluded from the Order limits mostly included non-agricultural and Grade 3b land.</p> <p>Tables 1 and 2 below provide a simple summary of the ALC grade breakdown at the Principal Site within the format requested by Natural England.</p>
--------	-----------------	------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Table 1: Updated ALC Grade Distribution within the Principal Site

ALC Grade	Total Area (ha)
Grade 2	9.2
Grade 3a	51.1
Grade 3b	1151.1
Non-Agricultural	133.4
Total	1,344.8

Table 2: Updated ALC Grade of the Principal Site Components

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
-------------	---------	-------	----------------------------------------	-------------------------------------

Principal Site Component	Temporary/Permanent	Grade 2	Grade 3a	Grade 3b	Total
		Area (ha)	Area (ha)	Area (ha)	Area (ha)
Solar Panels	Temporary	-	24.0	686.0	710
Solar Stations and BESS	Temporary	-	0.2	23.1	23.2
Temporary Construction Compounds	Temporary	-	-	2.0	2
Solar Farm Control Centre and Storage	Temporary	-	-	0.2	0.2
On-site Substations	Permanent	-	-	2.5	2.5
Access Roads	Temporary	-	>0.1	0.4	0.5
Access Tracks	Temporary	>0.1	0.2	9.5	9.7
Permissive Path	Temporary	-	-	8.6	8.6
Biodiversity Zone	Temporary	8.1	12.6	191.3	212.0
Sensitive Archaeological Site	Temporary	1.1	9.7	61.1	71.9
Proposed Woodland	Permanent	-	0.9	32.7	33.7
Total**		9.2	47.5	1017.5	1074.2

**Figures quoted are rounded to 0.1ha, as such some totals do not add up due to rounding.*

***These totals do not directly align with Table 1 as Non-Agricultural land and retained habitats are excluded.*

The Applicant has also prepared an Impacts on Agricultural Land in Lincolnshire Report which is appended to this document (**Appendix B**) which also sets out the Scheme's impact on BMV land and provides a breakdown of land use used by the Scheme.

The Applicant acknowledges Natural England's queries regarding the split of permanent and temporary land-use. As set out within Table 2, for a worst-case agriculture and soils assessment within the ES, the proposed woodland and substations have been assumed to be permanent. Albeit it is anticipated that in practice, the future of the substations would be agreed with Local Planning Authority prior to the commencement of the decommissioning phase and the substation structures can be removed entirely with stored topsoil replaced and the land returned to its current agricultural management options. In addition, the proposed woodland

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>areas would be handed back to the previous landowners and the actual management of the land will then be the decision of the landowner.</p> <p>Professional judgement must also be used when determining the appropriate use of a 20ha BMV trigger on a NSIP solar site as opposed to smaller planning applications. In this case where the proposed planning consent is temporary and agricultural land use can continue, it would not be appropriate to apply a fixed area threshold in the same manner as for a permanent consent for built development with no realistic prospect of return of agricultural land, such as residential development.</p>
RR-208	Natural England	Clarification on ALC summary at Principal Site	<p>NE15 Soils and best and most versatile agricultural land Clarification on ALC summary at Principal Site (C), (O), (D) Chapter 15, paragraph 15.6.2 – Natural England advise the applicant to make it clear the data presented in EN010142/APP/6.2 records a greater proportion of BMV land because of the larger area that was surveyed in comparison to the DCO boundary. Amend the paragraph to clarify extent of BMV land within the DCO boundary.</p>	<p>The Applicant confirms that the study area for the ALC survey presented in the Appendix 15-2: Agricultural Land Classification Baseline Report of the Environmental Statement [APP-116] is greater in extent than that of the Order limits.</p> <p>As set out within Table 15-10 of Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the Order limits of the Principal Site include 9.2ha of Grade 2 land and 51.1ha Grade 3a land. This stays the same following the reduction of the Order limits as part of the Change Application.</p>
RR-208	Natural England	Comments on Framework Soil Management Plan	<p>NE16 Soils and best and most versatile agricultural land Framework Soil Management Plan (C), (O), (D) Chapter 15, paragraph 15.7.2 – Natural England welcomes the Embedded environmental measures to minimise soil impacts, and the proposal to prepare a Framework Soil Management Plan (fSMP) containing soil mitigation measures in line with the Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites. The fSMP needs to be clear that the aim is for BMV agricultural land to be returned to its original quality and all soils to be suitable for the planned end use. For example, this could be actioned by a target specification for the restored soils according to location and soil types, end use and required ALC grade. It is expected that soil data collected as part of the ALC surveys will be re-used to develop the detailed SMP. This soil data should be supplemented, where necessary, to provide coverage for all soils including those in non-agricultural use. The Soil Resource Plan should show the areas and type of topsoil and subsoil to be stripped, haul routes, the methods to be used, and the location, type and management of each soil stockpile.</p>	<p>Section 4.2 of the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)] has been updated to incorporate a requirement for a target specification for the restored soils and with regards to the contents of the detailed Soil Management Plan. The revised Framework Soil Management Plan [EN010142/APP/7.12(Rev01)] is submitted into examination at Deadline 1.</p> <p>It should however be noted that ALC grade is deliberately resistant to change through land management. ALC assessment was devised specifically to inform development planning decisions and considers factors such as clay content and depth, that are beyond land manager to influence. This was to avoid giving land owners an opportunity to degrade land to facilitate planning consent. There is therefore minimal scope for any change to ALC Grade in a solar farm development where disturbance of soil across the PV areas is limited.</p> <p>A detailed Soil Management Plan is to be prepared in substantial accordance with the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)]. This is secured by Requirement 18 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation																																																																						
			Ensure the detailed SMP is secured by requirement of the DCO and is informed by the fSMP and ALC surveys.																																																																							
RR-208	Natural England	Commitment to removal and retention of proposal components	<p>NE17 Soils and best and most versatile agricultural land Commitment to removal and retention of proposal components (D)</p> <p>Chapter 15, paragraph 15.8.7 – Based on the information provided in support of the planning application, we note that the proposed principal site would extend to approximately 1350ha, including some 61.79ha of BMV agricultural land; namely Grades 2 and 3a land in the ALC system. Of this 61.79ha it is noted (Environmental Statement document ref EN010142/APP/6.2) 33.66ha will be permanently lost.</p> <p>Chapter 15, paragraph 15.8.4 – The applicant should firmly commit to either removal or retention of proposal components. Natural England do not agree with the phrasing ‘potential to be permanent’ used in the assessment of likely effects. Natural England also seek clarification on whether the applicant considers woodland, and the on-site substations are permanent or temporary.</p> <p>Therefore, the Scheme should provide simple breakdowns of the areas of temporary development and permanent habitat creation / development and associated ALC Grade in the summary. For example, total agricultural area impacted by scheme (split by scheme component and by ALC grade), total area of BMV agricultural land (split by component) and total BMV agricultural area permanently and temporarily required for the development (split by component). We do recognise the majority of land this refers to is grade 3b.</p> <p>The Scheme should provide a breakdown of elements to be permanently retained and their situation in regards to BMV.</p>	<p>The Applicant submitted a Change Request on 27 September 2024 which was granted on 24 October 2024 and reduced the overall area of the Principal Site by 5ha. The areas excluded from the Order limits mostly included non-agricultural and Grade 3b land.</p> <p>Tables 1 and 2 below provide a simple summary of the ALC grade breakdown at the Principal Site within the format requested by Natural England.</p> <p>Table 1: Updated ALC Grade Distribution within the Principal Site</p> <table border="1"> <thead> <tr> <th>ALC Grade</th> <th>Total Area (ha)</th> </tr> </thead> <tbody> <tr> <td>Grade 2</td> <td>9.2</td> </tr> <tr> <td>Grade 3a</td> <td>51.1</td> </tr> <tr> <td>Grade 3b</td> <td>1151.1</td> </tr> <tr> <td>Non-Agricultural</td> <td>133.4</td> </tr> <tr> <td>Total</td> <td>1,344.8</td> </tr> </tbody> </table> <p>Table 2: Updated ALC Grade of the Principal Site Components</p> <table border="1"> <thead> <tr> <th rowspan="2">Principal Site Component</th> <th rowspan="2">Temporary/ Permanent</th> <th>Grade 2</th> <th>Grade 3a</th> <th>Grade 3b</th> <th>Total</th> </tr> <tr> <th>Area (ha)</th> <th>Area (ha)</th> <th>Area (ha)</th> <th>Area (ha)</th> </tr> </thead> <tbody> <tr> <td>Solar Panels</td> <td>Temporary</td> <td>-</td> <td>24.0</td> <td>686.0</td> <td>710</td> </tr> <tr> <td>Solar Stations and BESS</td> <td>Temporary</td> <td>-</td> <td>0.2</td> <td>23.1</td> <td>23.2</td> </tr> <tr> <td>Temporary Construction Compounds</td> <td>Temporary</td> <td>-</td> <td>-</td> <td>2.0</td> <td>2</td> </tr> <tr> <td>Solar Farm Control Centre and Storage</td> <td>Temporary</td> <td>-</td> <td>-</td> <td>0.2</td> <td>0.2</td> </tr> <tr> <td>On-site Substations</td> <td>Permanent</td> <td>-</td> <td>-</td> <td>2.5</td> <td>2.5</td> </tr> <tr> <td>Access Roads</td> <td>Temporary</td> <td>-</td> <td>>0.1</td> <td>0.4</td> <td>0.5</td> </tr> <tr> <td>Access Tracks</td> <td>Temporary</td> <td>>0.1</td> <td>0.2</td> <td>9.5</td> <td>9.7</td> </tr> <tr> <td>Permissive Path</td> <td>Temporary</td> <td>-</td> <td>-</td> <td>8.6</td> <td>8.6</td> </tr> </tbody> </table>	ALC Grade	Total Area (ha)	Grade 2	9.2	Grade 3a	51.1	Grade 3b	1151.1	Non-Agricultural	133.4	Total	1,344.8	Principal Site Component	Temporary/ Permanent	Grade 2	Grade 3a	Grade 3b	Total	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Solar Panels	Temporary	-	24.0	686.0	710	Solar Stations and BESS	Temporary	-	0.2	23.1	23.2	Temporary Construction Compounds	Temporary	-	-	2.0	2	Solar Farm Control Centre and Storage	Temporary	-	-	0.2	0.2	On-site Substations	Permanent	-	-	2.5	2.5	Access Roads	Temporary	-	>0.1	0.4	0.5	Access Tracks	Temporary	>0.1	0.2	9.5	9.7	Permissive Path	Temporary	-	-	8.6	8.6
ALC Grade	Total Area (ha)																																																																									
Grade 2	9.2																																																																									
Grade 3a	51.1																																																																									
Grade 3b	1151.1																																																																									
Non-Agricultural	133.4																																																																									
Total	1,344.8																																																																									
Principal Site Component	Temporary/ Permanent	Grade 2	Grade 3a	Grade 3b	Total																																																																					
		Area (ha)	Area (ha)	Area (ha)	Area (ha)																																																																					
Solar Panels	Temporary	-	24.0	686.0	710																																																																					
Solar Stations and BESS	Temporary	-	0.2	23.1	23.2																																																																					
Temporary Construction Compounds	Temporary	-	-	2.0	2																																																																					
Solar Farm Control Centre and Storage	Temporary	-	-	0.2	0.2																																																																					
On-site Substations	Permanent	-	-	2.5	2.5																																																																					
Access Roads	Temporary	-	>0.1	0.4	0.5																																																																					
Access Tracks	Temporary	>0.1	0.2	9.5	9.7																																																																					
Permissive Path	Temporary	-	-	8.6	8.6																																																																					

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
-------------	---------	-------	----------------------------------------	-------------------------------------

Biodiversity Zone	Temporary	8.1	12.6	191.3	212.0
Sensitive Archaeological Site	Temporary	1.1	9.7	61.1	71.9
Proposed Woodland	Permanent	-	0.9	32.7	33.7
Total**		9.2	47.5	1017.5	1074.2

**Figures quoted are rounded to 0.1ha, as such some totals do not add up due to rounding.*

***These totals do not directly align with Table 1 as Non-Agricultural land and retained habitats are excluded.*

The Applicant has also prepared an Impacts on Agricultural Land in Lincolnshire Report which is appended to this document (Appendix B) which also sets out the Scheme's impact on BMV land and provides a breakdown of land use used by the Scheme.

The Applicant acknowledges Natural England's queries regarding the split of permanent and temporary land-use. As set out within Table 2, for a worst-case agriculture and soils assessment within the ES, the proposed woodland and substations have been assumed to be permanent. Albeit it is anticipated that in practice, the future of the substations would be agreed with Local Planning Authority prior to the commencement of the decommissioning phase and the substation structures can be removed entirely with stored topsoil replaced and the land returned to its current agricultural management options. In addition, the proposed woodland areas would be handed back to the previous landowners and the actual management of the land will then be the decision of the landowner.

Paragraph 15.4.22 of **Chapter 15: Agriculture and Soils** of the Environmental Statement [APP-046] states:

"The IEMA guidance on assessing land and soil in EIA clarifies that the guidance on assessing magnitude of impact applies to 'hard development' which includes permanent sealing or sterilisation of agricultural land. The change of agricultural land to woodland does not fall under these definitions and is therefore not subject to this assessment criteria. This aligns with current Government initiatives to encourage farmers to convert arable land to woodland in England and Wales."

As such, the areas of proposed woodland are not considered to result in a significant effect.

The only remaining permanent loss of agricultural land relates to the loss of 2.5ha of Grade 3b land to the onsite substations. In accordance with the

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>significance criteria set out within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046], this comprises a minor impact on a medium sensitivity receptor, which results in a negligible (not significant) effect.</p> <p>As the Grade 3b land that could be lost to the substations is not BMV land, there is no permanent loss of BMV land to 'hard development' as a result of the Scheme.</p>
RR-208	Natural England	Conclusion of impacts to soil function	<p>NE18 Soils and best and most versatile agricultural land Conclusion of impacts to soil function (C), (O), (D) Chapter 15, paragraph 15.8.19 – The conclusion that there will be a moderate beneficial impact on the soil resource during operation is not evidenced. Although arable reversion to grassland has been shown to benefit soil quality (through increased Soil Organic Matter (SOM)), it is unclear what impact solar arrays will have on soil properties such as carbon storage, structure and biodiversity. For example, as a result of changes in shading; temperature changes; preferential flow pathways; micro-climate; and vegetation growth caused by the panels. Therefore, it is currently unknown what the overall impact of a temporary Solar development will have on soil health. EN010142/APP/7.12, paragraph 5.6.6 – Natural England welcomes the intent to monitor operational impacts on the long-term effects of solar on soils health. In the absence of information on impacts to soil health, we suggest that the developer could commit to a programme of soil health monitoring for the lifetime of the project to support development of the evidence base around long-term impacts to soil health from solar.</p>	<p>Defra R&D project Best Practice for Managing Soil Organic Matter in Agriculture - SP08016 (Ref 1-3) is unequivocal that the reversion of arable land to grassland enables a recovery of soil organic matter, which in turn provides additional wider environmental benefits. While there may be as yet unknown marginal effects (positive or negative) owing to the presence of solar panels, it is not considered plausible that these could negate the clear beneficial effect of the reversion of arable land to grass. Were such a phenomenon to exist, it should already be apparent in existing UK solar farms.</p> <p>Monitoring of soils during the operational phase of the Scheme is welcomed by the Applicant, as set out within Paragraph 5.6.6 of the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)]. The Applicant agrees that this information can then be used as an evidence base around long-term impacts to soil health from solar projects.</p>
RR-208	Natural England	Soil Management Plan - Suitably qualified soils specialist	<p>NE19 Soils and best and most versatile agricultural land SMP - Suitably qualified soils specialist (C) EN010142/APP/7.12, paragraph 2.3.2 - As outlined, we concur that if the development proceeds, the developer uses an appropriately experienced soil specialist to advise on, and supervise, soil handling, including identifying when soils are dry enough to be handled and how to make the best use of the different soils on site. All soils should only be handled in a dry and friable condition, and it is expected that soil handling will be confined to the drier summer period to minimise risk of soil damage</p>	<p>The preparation of a detailed Soil Management Plan (SMP) is secured by Requirement 18 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] which provides that an SMP must be submitted to and approved by the relevant planning authority (/authorities) and must be substantially in accordance with the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)]. The requirement for supervision by a suitably experienced soil scientist is set out in Section 5.1 of the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			Ensure this is included in the detailed SMP and that the SMP is secured by a requirement of the DCO.	
RR-208	Natural England	Details of the Framework Soil Management Plan	<p>NE20 Soils and best and most versatile agricultural land SMP - CEMP (C) EN010142/APP/7.12, paragraph 3.1.3 - The detailed SMP must be prepared with site-specific soil information informing the soil handling and mitigation. Ensure this is included in the detailed SMP and that the SMP is secured by a requirement of the DCO.</p>	<p>The Framework Soil Management Plan [EN010142/APP/7.12(Rev01)] provides that the detailed SMP will include measures to (among other things) prepare a plan of topsoil units within the Principal Site and the Cable Route Corridor that should not be combined or exchanged in soil handling operations, as well as a requirement to keep daily records of site and soil conditions during soil handling activities. The preparation of a detailed SMP is secured by Requirement 18 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], which provides that an SMP must be submitted to and approved by the relevant planning authority (/authorities) and must be substantially in accordance with the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)].</p>
RR-208	Natural England	Soil handling in the Framework Soil Management Plan	<p>NE21 Soils and best and most versatile agricultural land SMP - Soil handling (C) EN010142/APP/7.12, paragraph 4.2.2 (e) – It is welcomed that all soils will only be handled in a dry and friable condition, and it is expected that soil handling will be confined to the drier summer period (April through September) to minimise risk of soil damage. This would minimise the need to recondition soils, which requires additional space and time. This is particularly important for land to be restored to agricultural use. Soil handling methods should normally be as specified as in the Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites The expected construction period and timing of soil handling should be noted within the fSMP 4.2.2, to ensure this is accounted for within the detailed SMP post-consent. This as a key avoidance measure for soil damage. Ensure SMP is secured by a requirement of the DCO.</p>	<p>The Applicant would advise that closed periods for soil handling should be based upon soil consistence following rainfall and not calendar dates. This is as heavy rain in a drier summer period can wet soil sufficiently to make it plastic and vulnerable to degradation when handled. Work should be able to progress with friable soils in a dry winter and should pause for plastic soil conditions in a wet summer, this follows the Institute of Quarrying (IoQ) Good Practice Guide for Handling Soils in Mineral Workings (Ref 1-4) provides guidance on soil wetness and consistence in Supplementary Note 4.</p> <p>The preparation of a detailed SMP is secured by Requirement 18 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], which provides that an SMP must be submitted to and approved by the relevant planning authority (/authorities) and must be substantially in accordance with the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)].</p>
RR-208	Natural England	Soil storage in the Framework Soil Management Plan	<p>NE22 Soils and best and most versatile agricultural land SMP - Soil bunds (C) EN010142/APP/7.12, paragraphs 4.3.5 & 5.3.1 - Bunds for the storage of agricultural soils shall conform to the following criteria: <ul style="list-style-type: none"> • Topsoils, subsoils and subsoil substitutes shall be stored separately. • Where continuous bunds are used dissimilar soils shall be separated by a third material. </p>	<p>Sections 4.2 and 5.3 of the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)] has been updated to address this comment and is submitted into examination at Deadline 1.</p> <p>Continuous bunds of dissimilar soils are not envisaged for this site. Use of such bunds is a space saving measure applicable to open cast workings and very large volumes of soil material. Sections 4.2 and 5.3 of the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)] has been updated to confirm criteria for storage bund dimensions and the separation of stored dissimilar soil material are met and is submitted into examination at Deadline 1.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<ul style="list-style-type: none"> • Topsoil bunds shall not exceed 3 m in height (5.3.1 notes topsoil may be stored in bunds up to 4m high) and subsoil (or subsoil substitute) bunds shall not exceed 5 m in height. • Materials shall be stored like upon like, so that topsoil shall be stripped from beneath subsoil bunds and subsoil from beneath overburden bunds. <p>Update to the fSMP to confirm these criteria are to be met. Ensure SMP is secured by a requirement of the DCO.</p>	<p>The preparation of a detailed SMP is secured by Requirement 18 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], which provides that an SMP must be submitted to and approved by the relevant planning authority (/authorities) and must be substantially in accordance with the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)].</p>
RR-208	Natural England	Soil compaction in the Framework Soil Management Plan	<p>NE23 Soils and best and most versatile agricultural land SMP – soil compaction (C) EN010142/APP/7.12, paragraph 5.7.2 - The depth of decompaction should reflect the depth of compaction. Additionally, where compaction is likely to take place further consideration should be given to providing a decompaction strategy to maximise the effectiveness of decompaction methods. Further guidance may be found here; IQ Soil Guidance Sheet O.pdf (hubspotusercontent30.net) Update to the fSMP to confirm these criteria are to be met. Ensure SMP is secured by a requirement of the DCO</p>	<p>Section 4.2 of the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)] has been updated to address this comment and is submitted into examination at Deadline 1. 'Stiff' lower subsoils of heavy clay loam or clay material may already have a high packing density that has not been recorded by an ALC survey where the overlaying upper subsoil and topsoil characteristics dictated ALC Grade. Furthermore, as solar farm construction, operation and decommissioning is unlikely to cause any perceptible increase in lower subsoil packing density, a decompaction strategy should be cautious in the extent and depth of decompaction required.</p> <p>The preparation of a detailed SMP is secured by Requirement 18 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], which provides that an SMP must be submitted to and approved by the relevant planning authority (/authorities) and must be substantially in accordance with the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)].</p>
RR-208	Natural England	Effects on Designated Landscapes in the ES	<p>NE24 Designated Landscape (C), (O), (D) The site is not located within, or within the setting of, any nationally designated landscapes. As a result, Natural England has no specific comments to make on the landscape implications of this development. The examining authority should have regard for the landscape character of the area; we welcome the reference to Natural England's National Character Areas within Environmental Statement Chapter 7: Landscape and Visual Effects. No further information required.</p>	<p>The Applicant notes this comment.</p>
RR-208	Natural England	Effects on Ancient Woodland and Veteran trees in the ES	<p>NE25 Ancient woodland and ancient/veteran trees (C), (D) Chapter 9, paragraph 9.8.4 - We welcome the review of ancient woodland and ancient & veteran trees and measures to avoid and mitigate impacts to them. This includes fencing and Root Protection</p>	<p>The Applicant notes this comment.</p> <p>The CEMP is secured by Requirement 13 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], which requires that detailed CEMP(s) must be submitted to and approved by the relevant planning authority</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>Areas to protect these habitats and ecological features from construction practice (Table 9-13). We would draw attention to Natural England's standing advice for ancient and veteran trees, which includes recommended buffer zones. We welcome reference to this guidance in the Arboricultural Impact Assessment.</p> <p>Four veteran trees are identified within the stand off areas for access to the site. As outlined in the report, the proposed mitigation is micrositing to avoid tree stems and rafting or similar to mitigate ground compaction at the roots.</p> <p>Details of ancient and veteran trees outlined in the Arboricultural Impact Assessment are referenced in the CEMP with appropriate avoidance and mitigation measures outlined.</p> <p>The mitigation for the four impacted veteran trees is informed by the Arboricultural impact Assessment and outlined in the CEMP.</p> <p>The CEMP should be secured by suitable requirement in the DCO.</p>	<p>(/authorities) that are substantially in accordance with the Framework CEMP [EN010142/APP/7.8 (Rev01)].</p>
RR-208	Natural England	Public Rights of Way	<p>NE26 Connecting people with nature Public Rights of Way (C) Chapter 16, paragraph 16.8.44 - Natural England note and welcome the review and mitigation proposed for most temporary interruptions on Public Rights of Way (PRoW). We note there will be a temporary closure of a PRoW that cannot be diverted or mitigated during the temporary closure. This has been classed as Minor Adverse (not significant) (Table16-24) due to the temporary nature. No further comments.</p>	<p>The Applicant notes this comment.</p>
RR-208	Natural England	Consideration of a Silt Management Plan	<p>Requirement 12 Construction environment management plan – Silt Management Plan Natural England welcome the inclusion of a Silt Management Plan as outlined in the fCEMP. Requirement 12 of the draft DCO notes that the fCEMP should inform the detailed CEMP. As such a Silt Management Plan should be included as part of the detailed CEMP (NE3).</p>	<p>A Silt Management Plan will be included within the detailed CEMP, as set out within Table 3-6 of the Framework CEMP [EN010142/APP/7.8 (Rev01)]. This is secured by Requirement 12 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], which requires that the detailed CEMP(s) must be substantially in accordance with the Framework CEMP.</p>
RR-208	Natural England	Bentonite Management Plan	<p>Requirement 12 Construction Environment Management Plan – Bentonite Management Plan Natural England note in the fCEMP, there is no outline or reference to a Bentonite Management Plan. As a potential pollutant from trenchless drilling methods such as HDD, a Bentonite Management Plan should be included in the detailed CEMP to mitigate for any pollution incidents where bentonite can enter the environment. This may be essential to mitigate potential impacts to river and sea lamprey using the River</p>	<p>Table 3-6 of the Framework CEMP [EN010142/APP/7.8 (Rev01)] includes the requirement for a site specific fracture assessment to be prepared, which would define the management measures for bentonite based on local ground conditions. Further measures for pollution prevention and control of bentonite are also set out within Table 3-6 of the Framework CEMP [EN010142/APP/7.8 (Rev01)]. Inclusion of these measures in the detailed CEMP(s) is secured by Requirement 12 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], which requires</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			Trent and associated waterways from the Humber Estuary SAC / Ramsar during trenchless construction (NE4).	that the detailed CEMP(s) must be in substantial accordance with the Framework CEMP.
RR-208	Natural England	Summary of matters related to Biodiversity Net Gain	Requirement 8 Biodiversity net gain We welcome the inclusion of a requirement for BNG and with reference to the planning authority and nature conservation body. We would suggest a commitment in the DCO for at least 10% gains and a Habitat Management and Monitoring Plan to ensure the habitats are retained for the lifetime of the Scheme (NE12).	Please refer to the Applicant's response to NE12 above.
RR-208	Natural England	Summary of matters related to Soil Management Plan	Requirement 18 Soils Management Natural England welcome the inclusion of this requirement for the SMP and that the detailed SMP must be substantially in accordance with the fSMP. However our 'amber' comments in Table 1 relating to the detail of the fSMP should be addressed (NE19-NE23).	Refer to the Applicant's responses to NE19-NE23 above.
RR-208	Natural England	Summary of matters related to Arboricultural Impact Assessment	Requirement 12 Construction environment management plan –Veteran trees Natural England welcome the inclusion of an Arboricultural Impact Assessment as outlined in the fCEMP. Requirement 12 of the draft DCO notes that the fCEMP should inform the detailed CEMP. As such the findings and mitigation outlined in the Arboricultural Impact Assessment should be included as part of the detailed CEMP.	The Applicant notes this comment. The inclusion of the findings and mitigation set out in the Arboricultural Impact Assessment in the detailed CEMP(s) is secured by Requirement 13 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] , which requires that detailed CEMP(s) must be submitted to and approved by the relevant planning authority (/authorities) that are substantially in accordance with the Framework CEMP [EN010142/APP/7.8 (Rev01)] .
RR-036	Canal and River Trust	Summary of matters related to the draft DCO	<u>The draft Development Consent Order (DCO) and Protective Provisions for the Trust</u> The draft DCO contains the same specific protective provisions for the Trust as have been made in the Gate Burton Development Order and included within the draft DCO's from the Cottam and West Burton Solar Projects. These protective provisions address the powers sought in the draft DCO which could otherwise impact the Trust as navigation authority for the River Trent. The Trust thanks the applicant for the inclusion of these protective provisions within schedule 16. The Trust also thanks the applicant for the wording in article 6(1)(f) of the draft DCO ensuring the disapplication of legislation will not impact the Trust's functions relating to the river.	The Applicant notes this comment.
RR-036	Canal and River Trust	Summary of matters related to the Canal & River Trust Third-Party Works Code of Practice	<u>The Trust's Third-Party Works Code of Practice</u> As with other nationally significant infrastructure projects (NSIPs) that include works that interface with the Trust's network, any parts of the Project with the potential to affect the River Trent and its associated operational dredging tips, should be carried out in accordance with the	The Applicant notes this comment.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>Canal & River Trust Third-Party Works Code of Practice (CoP). The protective provisions for the Trust in the draft DCO include an express obligation ensuring the applicant to have regard to the CoP in the detailed survey, design, construction and approval of the relevant works.</p> <p>The Trust's CoP is designed to protect operational land, safeguard all users of the navigation and to deal with the nuances of developing adjacent to a commercial waterway with an ever-changing tidal riverbed. The extent of potential impacts from development adjacent to, or under, navigational waters could reach far beyond the crossing point proposed. Ensuring that development is appropriately located and controlled is crucial to limit the potential for risk to our operational land, users of the river and the associated economic, environmental and social consequences.</p> <p>Through the CoP, developers engage with the Trust's engineers who are specialists in waterway engineering, navigational safety, the protection and safeguarding of the riverbed and the ecology of the waterway. It is essential that the projects incorporate appropriate measures to protect our operational land and the users of the river before, during and after construction for all temporary and permanent works affecting the waterway, including surveying and sampling within the waterway. Engaging with the Trust's engineers ensures the appropriate measures are taken.</p> <p>The protective provisions and use of the CP will deal with all of the Trust's concerns relating to:</p> <ul style="list-style-type: none"> • Horizontal Directional Drilling and surveys • Protection of the Trust's dredging tip • Discharge of water into, and prevention of siltation etc. of, the river • Noise & Vibration • Ecology & Biodiversity in the river • Lighting during construction • Landscape & Visual Impact <p>Use of River Trent for Works Traffic</p>	
RR-036	Canal and River Trust	Horizontal Directional Drilling	<p><u>Horizontal Directional Drilling and surveys</u></p> <p>In terms of Works Package 4D, relating to the cable crossing of the River Trent, we welcome that this would be undertaken via trenchless techniques with the Crossing Schedule confirming that the crossing beneath the River Trent is proposed by Horizontal Directional Drilling (HDD).</p> <p>Following the acceptance of the Application for examination, the applicant has indicated in writing separately to the Trust that they would be willing to remove land parcels 20-07 and 20-12, which are</p>	<p>The Applicant submitted a Change Application at the end of September 2024 which was granted on 24 October 2024. This included the removal of land parcels 20-07 and 20-12 from the Order limits and revisions to the wording of the Outline Design Principles Statement [AS-058] and Chapter 3: Scheme Description [AS-053] to reference the following design principle:</p> <p><i>"This is with the exception of the River Till and the River Trent where cables will be installed at a minimum of 5m below the lowest surveyed</i></p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>small corners of our operational property dredging tips, as part of a change application and update the wording within the Outline Design Principles Statement and Environmental Statement Chapter 3: Scheme Description. As drafted currently the Outline Design Principles Statement (page 9) includes 'River Trent where cables will be installed at a minimum of 5m below the bed of the watercourse, and a maximum depth of 25m, depending on the ground investigation results.' and Chapter 3: Scheme Description states 'A minimum depth of 2m below the bed of watercourses is required, to avoid any impacts, excluding the River Trent and River Till where cables will be installed by trenchless methods at a minimum of 10 m below the bed to prevent disturbance to fish species. The cable depth below the bed of River Trent and River Till is expected to be a maximum of 25 m (depending on the final ground investigation, and subject to appropriate consents being obtained).'</p> <p>We recommend that for consistency Tillbridge adopt the same wording as within the Gate Burton, Cottam and West Burton Outline Design Principles which is 'The HDD depth will be a maximum of 25m below the bottom of the riverbed and a minimum of 5m below the lowest surveyed point of the River Trent riverbed in order to prevent risk of any scour exposing cable.'</p> <p>Survey will be a necessary precaution to establish the geological substrate and depth of riverbed silt in order to calculate an appropriate depth for HDD beneath the tidal waters of the River Trent to prevent sediment mobilisation. This would inform the design process and prevent the mobilisation of silt from the riverbed which would have potentially detrimental impacts on the navigational safety of the River Trent and its ecology.</p> <p>We look forward to ensuring that all survey work of the River Trent, including ground investigations carried out with full consideration for navigational safety within this commercial waterway and reviewing the technical drawings of the project in relation to the riverbed. If amendment of the land parcels does not occur, the dredging tip sites should also be fully surveyed and protected as an operational asset. We propose that this would be in accordance with the mechanisms contained in the protective provisions. Similarly, we look forward to working with the applicant in relation to the launch and reception areas for the river crossing, ensuring appropriate measures are put in place to protect and safeguard our assets, particularly in relation to the dredging tips. The dredging tips are the subject of environmental permitting, and the Trust will need to be satisfied that the proposed works would not cause any of the conditions of that permit to be breached.</p>	<p><i>point of the riverbed to prevent disturbance to fish species, and a maximum depth of 25m, depending on the ground investigation results."</i></p> <p>The Applicant has adopted the above design principle for HDD depth below the River Trent in accordance with the agreed position with the Canal and River Trust for the consented Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133]. A ground investigation and tidal riverbed survey will be undertaken prior to the works under the River Trent to confirm the final design, as set out within the Framework CEMP [EN010142/APP/7.8 (Rev01)].</p> <p>The Applicant also confirms that the protective provisions agreed with the Canal and River Trust as set out within Schedule 14, Part 4 of the draft DCO [EN010142/APP/3.1(Rev03)] include requirements for the undertaker to engage with and gain the consent of the Canal and River Trust in respect of the design and method of the survey works for the River Trent. The protective provisions also require engagement with and approvals from the Canal and River Trust for the river crossing works subsequent to those survey(s) including in respect of the launch and reception areas.</p>
RR-036	Canal and River Trust	Discharge of water into, and prevention	<u>Discharge of water into, and prevention of siltation etc. of, the river</u>	The Applicant notes this comment.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
		of siltation etc. of, the River Trent	The Trust welcomes measures in the Application documents Framework Construction Environmental Management Plan and Environmental Statement Chapter 9: Ecology and Nature Conservation which seek to prevent silt and contaminants entering watercourses through the use of sediment/silt traps/temporary dams and engineers overseeing HDD works to ensure an adequate depth is used. We consider the proposed power in the draft DCO for the undertaker to discharge water in respect of the River Trent is appropriately subject to the Trust's consent as provided for in the protective provisions for the Trust.	
RR-036	Canal and River Trust	Noise and Vibration Management	<p><u>Noise & Vibration</u></p> <p>In response to the Trust's pre-application comments regarding noise and vibration as they affect the River Trent, the Trust welcomes that noise monitoring is proposed as set out in the Framework Construction Environmental Management Plan. We note that this document does not refer to navigational safety either with regards to noise, or vibration during the proposed directional drilling. These matters should be considered as noise could affect navigational safety and the riverbanks and bed may be adversely affected by vibration causing silt mobilisation. The dredging tip bund could also be adversely affected by works causing vibration adjacent to this operational facility. We consider the best means of achieving asset specific assessment, monitoring and mitigation is through the mechanisms provided for in the protective provisions for the Trust.</p>	<p>Excessive noise may affect navigational safety by interfering with on-board communication. To put this into context, a normal conversation is possible between people at a distance of 2m apart at noise levels of up to 80dB. Any construction activity associated with the HDD would be at least 250m from the River Trent (as set out within the Framework CEMP [EN010142/APP/7.8 (Rev01)]) so noise would be substantially lower than 80 dB (around 55 dB) and would not affect on-board communication.</p> <p>In addition, as set out within the Framework CEMP [EN010142/APP/7.8 (Rev01)], Best Practicable Means (BPM) in accordance with BS 5228 Part 2 (Ref 1-5) will be applied, as far as reasonably practicable, during construction works to minimise vibration which therefore will not affect the navigation of the river and the dredging tip bund.</p> <p>The Applicant also notes the commitments made within the protective provisions with the Canal and River Trust at Schedule 14, Part 4 of the draft DCO [EN010142/APP/3.1(Rev03)] to secure the appropriate management of construction effects (including noise and vibration) including the commitments to undertake works "<i>in such manner as to cause as little detriment to the waterway as is reasonably practicable; [and] in such manner as to cause as little inconvenience as is reasonably practicable to the Canal & River Trust, its officers and agents and all other persons lawfully using the waterways, except to the extent that temporary obstruction has otherwise been agreed by the Canal & River Trust;</i>".</p>
RR-036	Canal and River Trust	Assessment of sediment release in the ES	<p><u>Ecology & Biodiversity in the river</u></p> <p>Environmental Statement Chapter 9: Ecology and Nature Conservation notes that the potential for release of sediment during drilling operations will be minimised by careful siting of drilling entry and exit pits, suitable depth control and visual monitoring. We consider the best means of ensuring that the survey, design and construction methodology protects the ecology of the waterway from sediment release during directional drilling beneath the River Trent is through the mechanisms provided for in the protective provisions for the Trust.</p>	The Applicant notes this comment. Land parcels 20-07 and 20-12 have been removed from the Order limits as part of the Change Application. The revised Land and Crown Plans [AS-040] present the land required for the Scheme following the removal of land parcels 20-07 and 20-12.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			If land parcels 20-07 and 20-12 are to remain within Works Package 4D, the methodology for the protection of biodiversity and ecology found on our dredging tips would need to be included within Environmental Statement Chapter 9: Ecology and Nature Conservation and we would welcome further survey work on this land to further inform the Applicant of necessary mitigation measures in respect of this works package. The Trust would be able to consider the detailed design of those works through the mechanisms provided for in the protective provisions for the Trust.	
RR-036	Canal and River Trust	Summary of matters related to construction lighting on ecology in the ES	<u>Lighting during construction</u> The Environmental Statement Chapter 9: Ecology and Nature Conservation notes that lighting impacts on retained habitats, bats and freshwater fish are reduced through measures to minimise the need for lighting and the timing of its usage, during all project phases. We consider the best means of ensuring navigational safety is not affected by site lighting is through the design-checking mechanisms provided for in the protective provisions for the Trust.	The Applicant notes this comment.
RR-036	Canal and River Trust	Summary of matters related to landscape and visual impacts in the ES	<u>Landscape & Visual Impact</u> The Trust is satisfied that the applicant has considered the impact of the solar panels on the navigational safety of the River Trent in Environmental Statement Chapter 17: Other Environmental Topics. This concludes no significant effects on the River Trent and therefore navigational safety of the river as a commercial waterway and leisure boating route should not be impacted as a result of glint and glare. In terms of visual impact Environmental Statement Chapter 12: Landscape and Visual Amenity para 12.6.126 describes the impact of the project on the PRow along the top of the River Trent flood bank as not significant. The impact as viewed from the lower water by our leisure users would be further mitigated by the lower water level and the increase in topographical screening provided by the flood banks.	The Applicant notes this comment.
RR-036	Canal and River Trust	Summary of matters related to use of the River Trent for freight in the ES	<u>Use of River for Works Traffic</u> We note that the use of the River Trent for the transportation of freight to site is considered within Environmental Statement Chapter 16: Transport and Access which concludes that waterborne freight would not be viable in this instance.	The Applicant notes this comment.
RR-117	Historic England	Buried archaeological remains	<u>Representation</u> With regards to buried archaeological remains it is important that risk of avoidable / unmitigated damage to sensitive remains is well managed in proportion to their importance. This can be achieved through layout, deployment of green space and construction options for cabling, panel mounting etc. Archaeological risks can thus be well	The Applicant notes this comment. An Archaeological Mitigation Strategy [EN010142/APP/9.5] identifying proposed areas for archaeological mitigation, including both preservation and archaeological investigation and recording, and recommendations for appropriate methods of archaeological investigation is submitted at Deadline 1, following consultation with LCC Historic Environment Officers

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>addressed with a sound understanding of where archaeological sensitivity and importance lies across the site and cable corridor.</p> <p>In this instance the applicant has undertaken extensive archaeological investigations which provides a sound basis for such impacts to be understood and addressed. We note that the applicant has engaged constructively with our advice in respect of both direct and setting impacts upon heritage assets. We note and welcome significant efforts to design out impacts.</p> <p>We note the setting impact assessments both in respect of this scheme and cumulatively in association with other NSIP developments, these will provide a basis for the ExA to weigh impacts against public benefits.</p> <p>For more detailed discussion of archaeological matters we refer you in the first instance to the expertise of local authority archaeological advisors. It is they who will (should DCO be granted with appropriate requirements) advise upon the acceptability of written schemes of investigation (WSI) and their accordance with a robust overall archaeological strategy secured through DCO submission.</p>	<p>and Historic England. The consultation of the strategy with Historic England is set out within the Historic England SoCG [EN010142/APP/9.17].</p>
RR-093	Environment Agency	Summary of matters related to ecology and biodiversity	<p><u>3.0 Ecology and biodiversity</u></p> <p>3.1 We would like to make the following comments in relation to the protection of ecology and biodiversity:</p>	<p>The Applicant notes this comment.</p>
RR-093	Environment Agency	Summary of matters related to ecology and BNG	<p>3.2 In general terms, we have read through the relevant documents and are satisfied that the developer is considering all the biodiversity elements of the project. We did note some slight discrepancies within the Biodiversity Net Gain calculations around the watercourse element which was concerning the culverting of small sections. However, we presume this was due to rounding and decimal points, but it would be good for this to be addressed.</p>	<p>The Applicant notes that these small discrepancies are due to the rounding up of the metric to 2 decimal places. The Biodiversity Net Gain Report [AS-062] clarifies this in a note to the tables in Appendix F.</p>
RR-093	Environment Agency	Monitoring of Electro Magnetic Fields (EMF) impacts on fish	<p>3.3 In addition, we note that, along with other proposed solar farms in the vicinity, this proposal involves laying cables under the River Trent. You may be aware from discussions in connection with the adjacent proposed solar farms at West Burton (Planning inspectorate reference EN010132) and Cottam (Planning inspectorate reference EN010133) that consideration has been given to whether there will be an impact from the Electro Magnetic Fields (EMF) generated by these cables on fish in the river.</p> <p>3.4 The potential impacts of Electro Magnetic Fields (EMF) on fish is a new/emerging issue, and not well researched. We have contacted leading academic researchers in the field of EMF to help make an</p>	<p>As set out within Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040] and Appendix 9-12: Habitat Regulations Assessment Report of the Environmental Statement [EN010142/APP/6.2(Rev01)], no likely significant effects from EMF on fish within the River Trent have been identified.</p> <p>However, Table 3-4 of the Framework OEMP [EN010142/APP/7.9(Rev01)] has been updated at Deadline 1 to confirm that the Applicant will contribute to the monitoring of EMF within the River Trent, as agreed with the other solar developers, subject to an agreement of the feasibility and extent of such monitoring programme within the River Trent with the Environment Agency and Natural England.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>assessment of this issue. As a result of this, we believe the figures provided would prove a low risk to fish.</p> <p>3.5 However, as this is an area of very little research, we cannot say there will categorically be no risk to fish populations. Accordingly, as requested for the other two projects listed above, we would like the Applicant to agree to undertake a scheme of monitoring to corroborate the predicted impacts of EMF on fish. We would suggest that the monitoring is linked to (and will therefore add to) academic research currently on going within the Trent catchment to demonstrate presence/absence of any impact to key protected species such as Lamprey at this site. This may include provision of fish tagging, and receivers at the cable crossing points. Relaying the results of the monitoring to us at regular intervals is also requested.</p> <p>3.6 The outline Operational Environmental Management Plans (OEMP) submitted by the applicant in connection with both the West Burton and Cottam Solar projects includes the following: "A programme of monitoring to corroborate the impacts of EMF on fish which might arise during operation of the power export cable which is to cross beneath the River Trent and how any such impacts compare to the predicted impacts of EMF on fish during operation of the power export cable will be carried out during the operation of the Scheme. Where any power export cables have also been laid for other solar projects beneath the River Trent and monitoring has been agreed for them, the purpose of the programme will be to monitor the cumulative impacts of the power export cables and a separate monitoring programme shall not be required for each solar project. The programme can be undertaken by the Applicant, by or in collaboration with the developers of the other solar projects and/or by a third party (for example, a university research team)."</p> <p>3.7 Related to this, we note that the draft version of the OEMP (April 2024) submitted as part of this application only considers the impact of electro-magnetic field on residential receptors (page 35). We are also aware from, for example, paragraph 6.13.39 of the non-technical summary for the Environmental Statement submitted in connection with this application, that the applicant's consultants consider, the combination of sealed cabling and a buried depth of at least 5 m below the bed of the River Trent is sufficient to reduce electro-magnetic fields to levels that are unlikely to be perceivable to fish species transiting along the River Trent and limited to a very small area. As such, it is considered no significant effects on fish has been identified.</p> <p>3.8 We do, however, note that in Chapter 9 (Ecology and nature conservation) it says 'The combination of sealed cabling and buried depth of at least 5m below the bed of the River Trent is adequate to mitigate any potential impact of Electromagnetic Fields (EMFs) on fish transiting along the River Trent (in particular European Eel and lamprey species). These inherent design features (cable sealing) and</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>embedded installation techniques (buried depth) are sufficient to reduce EMFs to levels that are unlikely to be perceivable to fish species transiting along the River Trent.' We note the word 'unlikely'. There is therefore a possible impact on fish.</p> <p>3.9 Furthermore, we wish to maintain that no substantive research has been carried out on this issue.</p> <p>3.10 In view of the above, as with the West Burton and Cottam solar schemes, we would therefore like to request a programme of monitoring to be included in the OEMP to be secured via Schedule 2, Requirement 13 (1) of this Development Consent Order.</p>	
RR-093	Environment Agency	Summary of documents reviewed in relation to hydrology, flood risk and drainage	<p><u>4.0 Hydrology, flood risk and drainage</u></p> <p>4.1 We have reviewed the documents listed below: Draft Development Consent Order with document reference: EN010142/APP/3.1 Land and Crown Land Plans with document reference: EN010142/APP/2.2 Works Plan with document reference: EN010142/APP/2.3 Environmental Mitigation and Commitments Register with document reference: EN010142/APP/6.5 Chapter 10: Water Environment with document reference: EN010142/APP/6.1 Appendix 10-3: Flood Risk Assessment with document reference: EN010142/APP/6.2 Figure 10-5: Watercourses, Flood Zones and Internal Drainage Boards with document reference: EN010142/APP/6.3 Consents and Agreements Position Statement with document reference: EN010142/APP/3.3 Framework Decommissioning Environmental Management Plan with document reference: EN010142/APP/7.10.</p>	The Applicant notes this comment.
RR-093	Environment Agency	Summary of matters in the draft DCO	<p>4.2 We have the following comments to make on Draft Development Consent Order with document reference: EN010142/APP/3.1</p> <ul style="list-style-type: none"> 1. Please see paragraphs 9 and 10 below for comments we wish to make about the Protective Provisions and the disapplication of Legislation. 2. Page 144, 115 (3) refers to a process during an emergency. Please can the definition of 'emergency' be listed under 111 (2) as per the EPR regulations 2016. This also applies to 116 (5). On page 328 (Schedule 25) of the EPR "Emergency" means an occurrence which presents a risk of— (a) serious flooding, (b) serious detrimental impact on drainage and (c) serious harm to the environment. 	<p>A response is provided below in respect of the Environment Agency's comments at paragraph 9 and 10 of its relevant representation regarding protective provisions.</p> <p>The Applicant has included the definition of emergency directly within the protective provisions as requested within the updated draft DCO [EN010142/APP/3.1(Rev03)] issued at Deadline 1.</p>
RR-093	Environment Agency	Comments on Chapter 10: Water Environment of the Environmental Statement	<p>4.3 We have the following comments to make on Chapter 10: Water Environment with document reference: EN010142/APP/6.1 figure</p> <ul style="list-style-type: none"> 1. Page 74, 10.7.7 states "the cable installation depth below the firm riverbed will be a minimum of 3m" however 10.7.8 refers to a minimum of 5m depth. Which is the minimum depth? 	<p><u>1. Page 74, 10.7.7</u></p> <p>The bore depths for cable installation will vary across the Order limits dependent on the watercourse. As described in Chapter 10: Water Environment of the Environmental Statement [APP-041], the minimum depth of trenchless crossings under watercourses will be 3.0m. For larger watercourse such as the River Trent and the River Till, the Applicant is</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<ul style="list-style-type: none"> • 2. Page 78, 10.7.17 (d) lists Skellingthorpe main drain as a trenchless crossing. This is not a watercourse that is located within the current site boundary. We believe this to be a typo. • 3. Page 78, under section “Water Crossings with Non-Intrusive Techniques”, we require the Undertaker to erect permanent hazard markers on both banks of the main river crossings to ensure future safety during maintenance. • 4. Page 81, 10.7.31 refers to an Emergency Response Plan. We would want to review this. • 5. Page 84, 10.7.44 refers to temporary crossings of watercourses. Please can locations of these crossings be provided as main river crossings will need to be reviewed. • 6. We require detailed drawings for each crossing site on a main river. These have not currently been provided. 	<p>committed to a minimum bore depth of 5.0m as previously agreed with the Environment Agency. Bore depths for cable installation are secured through compliance with the Outline Design Principles Statement [AS-058]. Requirement 5 within Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] sets out that the detailed design of the Scheme must accord with the Outline Design Principles Statement.</p> <p><u>2. Page 78, 10.7.1 (d)</u> The words ‘catchment of the’ should have been placed before the name ‘Skellingthorpe main drain’. This is referring to a watercourse in the north of the Skellingthorpe main drain (SMD) catchment and not the SMD itself.</p> <p><u>3. Page 78, under section “Water Crossings with Non-Intrusive Techniques”</u> Agreed. The details provided at this stage are exemplar and specific details such as signage is usually provided on the detailed design drawings. An updated Figure 3-12: Typical Trenchless Crossings Cross Sections of the Environmental Statement [EN010142/APP/6.3(Rev01)] has been issued at Deadline 1 to add exemplar signage for the avoidance of doubt.</p> <p><u>4. Page 81, 10.7.31</u> As set out within paragraph 2.10.1 of the Framework CEMP [EN010142/APP/7.8 (Rev01)], an Emergency Response Plan will be developed in consultation with the relevant local authority emergency planning officer, emergency services including the local fire service, as well as the Environment Agency in relation to responding to flood warnings and events. The Emergency Response Plan would be developed by the Contractor post-DCO consent. The implementation of a final CEMP in accordance with the Framework CEMP (including in respect of the ERP requirements) is secured by Requirement 12 within Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], which also includes consultation requirements with the Environment Agency.</p> <p><u>5. Page 84, 10.7.44</u> It is expected that eleven temporary access track watercourse crossings will be required along the Cable Route Corridor for minor watercourses / drains, in order to facilitate construction access. No temporary access track watercourse crossings of main rivers (i.e. River Trent and River Till) are proposed. The indicative locations of the temporary access track watercourse crossings along the Cable Route Corridor have been added to Figure 10-5: Watercourses, Flood Zones and Internal Drainage Boards of the Environmental Statement [EN010142/APP/6.3(Rev01)].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p><u>6. Drawings for crossings</u></p> <p>Trenchless crossings of the River Trent and the River Till are proposed. Typical trenchless crossing details have been provided within Figure 3-12: Typical Trenchless Crossings Cross Sections of the Environmental Statement [EN010142/APP/6.3(Rev01)]. Updated drawings for all main river crossings will be provided at detailed design stage once further surveys of each watercourse have been undertaken. The Framework CEMP [EN010142/APP/7.8 (Rev01)] has been updated at Deadline 1 to include reference to Figure 3-12, within Table 3-5.</p>
RR-093	Environment Agency	Summary of matters related to the Decommissioning Environmental Management Plan	<p>4.4 We have the following comment to make on the Framework Decommissioning Environmental Management Plan with document reference EN010142/APP/7.10:</p> <p>1. We would want to review the final decommissioning plan to confirm the details around leaving cable routes under main rivers/filling cable routes. Please see the comments in paragraph 11 below about us wishing to be named as a specific consultee in relation to decommissioning.</p>	<p>The Applicant notes this comment, and has included the Environment Agency as a further body for consultation in relation to the Framework DEMP [EN010142/APP/7.10(Rev01)] within Requirement 20 of the updated draft DCO [EN010142/APP/3.1(Rev03)] presented at Deadline 1.</p>
RR-093	Environment Agency	Flood Risk Assessment	<p>4.5 We have the following comments to make on Appendix 10-3: Flood Risk Assessment (FRA) with document reference: EN010142/APP/6.2</p> <ul style="list-style-type: none"> 1. The FRA does not look to have requested any Product 4 data for the River Trent. We have a 2023 model prepared by Jacobs with detailed flood heights for all climate change scenarios and breach of defences scenarios. However, this new Tidal Trent data does not show the principal site with the solar panels to be at risk from the Trent even beyond the 2080s. We have information which shows the estimated risk in 2121 and the principal site is still unaffected by the Trent. On this basis, we do not consider it is necessary to update the Flood Risk Assessment in relation to the principal site to take this extra information into account. 2. However, beyond the principal site, we note there are 6 temporary construction compounds to be provided along the cable route corridor. Our records show 4 are located within Flood Zone 1 and 2 are located within Flood Zone 3. The ones in Flood Zone 3 are to the West of Cottam as shown on Figure 3-6 (Indicative construction compound locations) in Volume 6 of the Environmental Statement (Document reference EN010142/APP/6.3). In general terms, they are protected by the Trent defences in a 1 in 100-year flood. Our initial assessment is that, in a breach of defences in a 1 in 100-year event, the northern compound of these 2 could experience depths of 1.9m and the southern compound depths of 1.2m. We would ask that the developer requests Product 4 data in order to fully assess the flood risk to the cable route crossing and works along the cable route e.g. the temporary compounds. Once this is done, we would recommend that the developer considers any 	<p>The Applicant notes comment 1.</p> <p>Regarding comment 2; the Applicant has applied for Product 4 data for the River Trent at Cottam Power Station for the two compounds in Flood Zone 3. The Applicant will continue to liaise with the Environment Agency to agree the approach to the flood risk assessment for the two temporary construction compounds within Flood Zone 3. Review of the spatial flood defence data (available at: Flood Defence Spatial Data) notes the flood defence in the reach upstream and downstream of Cottam Power Station is designed to provide a defence level up to the 1 in 100 year Annual Exceedance Probability (AEP) event. Residual risk and potential mitigation of a breach scenario of the flood defences will be assessed and agreed with the Environment Agency.</p> <p>Section 2.10 of Framework CEMP [EN010142/APP/7.8 (Rev01)] states that an Emergency Response Plan will be developed in consultation with the relevant local authority emergency planning officer, emergency services including the local fire service, as well as the Environment Agency in relation to responding to flood warnings and events.</p> <p>Regarding comment 3; development within areas of Flood Zones 2 and 3, infrastructure will comprise solar PV panels and security fencing. No additional above ground infrastructure will be located within areas of fluvial flood risk. The Cable Route Corridor and connection at Cottam Power Station will comprise no permanent above ground infrastructure.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>implications and, at a very minimum, includes in their plans a safe refuge above the flood heights that this shows. We would also recommend that they have an emergency plan for flood events and, in preparing this, be aware that breaches of defences can occur suddenly and without warning.</p> <ul style="list-style-type: none"> 3. In addition, we note on page 2 that the FRA states that, other than the solar panels, there will be no permanent above ground development in flood zones 2 or 3 except for a section of the 2.4m high open mesh principal site security fence along Field 56 in the north of the principal site, which will allow flood flows to pass through. We assume this means that the cable route and connection at Cottam do not include any permanent above ground works in these flood zones. If this is not correct, please let us know in order that we can comment further on this matter. 4. Section 8.1.2 – We note this says ‘No additional flood risk mitigation or floodplain compensation is considered to be required for the Scheme to be compliant with flood risk policy and guidance’. In response to this, please can this be amended to take account of your response to the temporary compounds referred to in point 2 above and any implications if there is any permanent above ground development in connection with the cable route and the connection at Cottam as referred to in point 3. 	<p>Regarding comment 4; Appendix 10-3: Flood Risk Assessment of the Environmental Statement [APP-097], Section 8.1.2 will be amended, should additional mitigation be required following review and response to the additional flood data requested, with agreement from the Environment Agency.</p>
RR-093	Environment Agency	Summary of documents reviewed in relation to ground conditions and contamination	<p>5.0 Ground conditions and contamination</p> <p>5.1 The following documents have reviewed with respect to controlled waters only:</p> <ul style="list-style-type: none"> Volume 3 Draft Development Consent Order Document Reference: EN010142/APP/3.1, dated April 2024 Volume 6 Environmental Statement Chapter 10: Water Environment Document Reference: EN010142/APP/6.1, dated April 2024 Volume 6 Environmental Statement Figure 10-2: Groundwater Features and their Attributes Document Reference: EN010142/APP/6.3, dated April 2024 Volume 6 Environmental Statement Figure 10-3: Bedrock Geology and Aquifer Status Document Reference: EN010142/APP/6.3, dated April 2024 Volume 6 Environmental Statement Figure 10-4: Superficial Geology and Aquifer Status Document Reference: EN010142/APP/6.3, dated April 2024 Volume 6 Environmental Statement Chapter 17: Other Environmental Topics Document Reference: EN010142/APP/6.1, dated April 2024 	The Applicant notes this comment.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<ul style="list-style-type: none"> Volume 6 Environmental Statement Appendix 17-3 Ground Conditions Principal Site Preliminary Risk Assessment Document Reference: EN010142/APP/6.2, dated 2024 Volume 6 Environmental Statement Appendix 17-4 Ground Conditions Cable Route Corridor Preliminary Risk Assessment Document Reference: EN010142/APP/6.2, dated April 2024 Volume 6 Environmental Statement Chapter 17: Other Environmental Topics Document Reference: EN010142/APP/6.1, dated April 2024 Volume 6 Environmental Statement Chapter 18: Cumulative Effects and Interactions Document Reference: EN010142/APP/6.1, dated April 2024 Volume 7 Framework Construction Environmental Management Plan Document Reference: EN010142/APP/7.8, dated April 2024 <p>5.2. As a result, we have comments to make on the following:</p>	
RR-093	Environment Agency	Water abstraction licence	<p><u>Chapter 10 Water Environment.</u></p> <p>5.3 Dewatering has been identified as a way of dealing with shallow groundwater during construction and Horizontal Directional Drilling. Section 10.8.27 recognises that a temporary abstraction licence when abstracting more than 20m³ per day and that a discharge consent may be required. The contractor should determine the need for an abstraction licence at an early stage. We advise early consideration is given to this so that permitting timescales can be built into the development programme so as not to cause delays.</p> <p><u>Figures 10.2, 10.3 & 10.4</u></p> <p>5.4 No comment</p>	Once appointed the Principal Contractor will determine the need if any to abstract water and any licences required to do so. Similarly, when appointed the Principal Contractor will determine the construction programme and when any potential abstraction licences will be applied for. This is set out within Section 2.11 of the Framework CEMP [EN010142/APP/7.8(Rev01)] .
RR-093	Environment Agency	Ground conditions and contamination	<p><u>Chapter 17: Other Environmental topics - Ground Conditions.</u></p> <p>5.5 We note that, at present, the Development Consent Order (DCO) is worded to allow for remedial work in respect of any contamination or other adverse ground conditions being permitted prior to the commencement of development.</p>	The Applicant notes this comment.
RR-093	Environment Agency	Ground conditions and contamination	<p>5.6 It is understood that a large proportion of the site is agricultural land which has a low sensitivity for controlled waters, although a smaller proportion has been used as an airfield which may represent a potential source of contamination. It should also be noted that former RAF bases can have extensive and often unmapped drainage systems. These can provide pollution pathways and so pollution prevention measures should take this into account during the development, operation and decommissioning of the site. We agree with the recommendation in the Stage 1 Preliminary Risk Assessment (Appendices 17-3 & 17-4) that limited site investigations should be conducted in areas of potential contamination.</p>	The Applicant notes this comment.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-093	Environment Agency	Ground conditions and contamination in relation to controlled waters	<p>5.7 We agree that these site investigations should take place prior to the commencement of development. We are, however, concerned that there does not appear to be any scope to consult on the findings of any investigations and the suggested remediation works before they take place. We would welcome reviewing any part of any contamination reports that relate to protection of controlled waters and regimes we regulate and be given the opportunity to comment on the remedial measures proposed. The works should then be undertaken taking our views into account.</p>	<p>The Applicant notes this comment and is happy for the Environment Agency to be consulted on the findings of the Site Investigation and any proposed remedial works related to protection of controlled waters and the regimes that the Environment Agency regulate. Table 3-12 of the Framework CEMP [EN010142/APP/7.8(Rev01)] has been updated at Deadline 1 to clarify this. Requirement 12 within the draft DCO [EN010142/APP/3.1(Rev03)] submitted for Deadline 1 has also been updated to provide for the Environment Agency as a prescribed consultee in respect of the final Construction Environmental Management Plan in general. The views of the Environment Agency would then be taken into account when designing / carrying out the works.</p>
RR-093	Environment Agency	Ground conditions and contamination	<p>5.8 With this in mind, in terms of controls, there does not appear to be a contaminated land specific requirement in Schedule 2 of the dDCO. We note there is reference to dealing with contamination in the Framework Construction Environmental Management Plan (pages 60 to 61) (document reference EN010142/APP/7.8). However, this Plan is secured through pre-commencement requirements (12(1) of Schedule 2 of the dDCO). If remediation works in respect of contamination can be carried out before commencement and does not trigger commencement, then any pre-commencement requirement (directly or indirectly through a Plan) cannot be an effective control.</p> <p>5.9 In summary, it is a question of being clear what control is appropriate here and making sure it is effective, which could mean wording is included so that remediation works cannot take place before a remediation strategy has been consulted upon and agreed etc. There should then be a requirement for it to be undertaken on this basis. We should therefore be grateful if this point could be addressed.</p>	<p>As set out in the response above, Table 3-12 of the Framework CEMP [EN010142/APP/7.8(Rev01)] has been updated at Deadline 1 to confirm that the Environment Agency would be consulted on the findings of the Site Investigation and any proposed remedial works related to protection of controlled waters and the regimes that the Environment Agency regulate, should these be required. Requirement 12 within the draft DCO [EN010142/APP/3.1(Rev03)] submitted for Deadline 1 has also been updated to provide for the Environment Agency as a prescribed consultee in respect of the final Construction Environmental Management Plan in general.</p>
RR-093	Environment Agency	Ground conditions and contamination	<p>5.10 In terms of general advice, as with any development on land that is potentially affected by contamination, we offer the following risk management good practice advice. Developers should:</p> <ul style="list-style-type: none"> • Follow the risk management framework provided in Land Contamination: Risk Management, when dealing with land affected by contamination • Refer to our Guiding principles for land contamination for the type of information that we require in order to assess risks to controlled waters from the site - the local authority can advise on risk to other receptors, such as human health • Consider using the National Quality Mark Scheme for Land Contamination Management which involves the use of competent persons to ensure that land contamination risks are appropriately managed <p>Refer to the contaminated land pages on gov.uk for more information</p>	<p>Table 3-12 of the Framework CEMP [EN010142/APP/7.8(Rev01)] has been updated at Deadline 1 to include references to the documents and guidance listed.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-093	Environment Agency	Cumulative effects and interactions	<u>Chapter 18 – Cumulative Effects and Interactions:</u> 5.11 No comment	The Applicant notes this comment.
RR-093	Environment Agency	Framework Construction Environmental Management Plan	<u>Framework Construction Environmental Management Plan:</u> 5.12 We welcome the inclusion of a pile risk assessment (Table 3-12: Ground Conditions) as well as the recognition of the relevant permits for dewatering during construction.	The Applicant notes this comment.
RR-093	Environment Agency	Framework Construction Environmental Management Plan	5.13 As referred to above, we recommend that the intrusive ground investigations take place prior to the commencement of development and it is considered that the Construction Management plan should be clearer on this point. For example, we note at present that page 59 of this document only says investigations will be carried out prior to construction. We also wish to reiterate our previous point that there does not seem to be a requirement for the Environment Agency to have an input into how the site is remediated.	The Applicant notes the comments raised. Table 3-12 of the Framework CEMP [EN010142/APP/7.8(Rev01)] has been updated at Deadline 1 to state that ground investigation is to be undertaken prior to the commencement of the development. Requirement 12 within the draft DCO [EN010142/APP/3.1(Rev03)] has been updated for Deadline 1 to provide for the Environment Agency as a prescribed consultee in respect of the final Construction Environmental Management Plan.
RR-093	Environment Agency	Framework Construction Environmental Management Plan	5.14 As referred to in Section 11 below, we wish to be named as a consultee on the detailed Construction Environmental Management Plan and we look forward to reviewing this document.	The Applicant notes the comments raised. Table 3-12 of the Framework CEMP [EN010142/APP/7.8(Rev01)] has been updated at Deadline 1 to address these comments. Requirement 12 within the draft DCO [EN010142/APP/3.1(Rev03)] has been updated for Deadline 1 to provide for the Environment Agency as a prescribed consultee in respect of the final Construction Environmental Management Plan.
RR-093	Environment Agency	Comments on Water Environment assessments	<u>6.0 Water environment and foul drainage</u> 6.1 We have reviewed Chapter 10: Water Environment [APP-041]. Our comments are as follows: 6.2 Paragraphs 10.3.1 - 10.3.13: Standard mitigation measures, no concerns. 6.3 Paragraph 10.3.14: We have no concerns if the developer is not abstracting from the surrounding watercourses. 6.4 Paragraphs 10.4.1 – 10.4.2: No comments. 6.5 Paragraphs 10.4.3 – 10.4.18: No comments. 6.6 Paragraphs 10.4.3 – 10.4.24: No comments. We are happy with the explanation of how they achieved the Water Framework Directive baseline. 6.7 Water Supply and Demand: No comment. 6.8 Surface water features, paragraph 10.6.18: No comments. We are happy with what is in here. 6.9 Standard Mitigation paragraphs 10.7.2 - .9: We note the Construction Environmental Management Plan will be revised and updated as the scheme progresses to stay dynamic and deal with anything that arises. We are happy with this approach. 6.10 Outline Drainage Strategy, paragraph 10.7.54: No comments.	The Applicant notes these comments. In reference to the comment regarding abstraction from the surrounding watercourses, we note that once appointed the Principal Contractor will determine the need if any to abstract water and any licences required to do so. This is set out within Section 2.11 of the Framework CEMP [EN010142/APP/7.8(Rev01)] . In reference to the comment regarding connection to public sewers, the Applicant conducted a search of the available public sewer network to determine if any were located within a viable distance to the Scheme. The viable distance was agreed with the Environment Agency to be 30m. There are no public sewer assets within 30m of the Scheme elements which would require connection, such as Construction Compounds and the Solar Farm Control Centre. There will be no discharge to the public sewer system. The foul drainage will be directed to a self-contained foul drainage system such as a cess pit or similar sealed tank. These tanks will be regularly emptied under contract with a registered recycling and waste management Contractor in accordance with all relevant waste management requirements prevailing at the time. This is presented within Table 10-5 of Chapter 10: Water Environment of the Environmental Statement [APP-041].

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>6.11 Foul Drainage, paragraph 10.7.62: We note this refers to the site having 10 to 12 staff and that these will generate low levels of foul drainage. We would always prefer connection to public sewer. However, it is noted that searches show no public sewer aspects in the area of the compounds or within 30m and therefore connection is not possible. If, as proposed, a self-contained foul drainage system is to be installed with tanks being regularly emptied by a registered waste management contractor, then the Environment Agency will not require consultation. If the proposed alternative option in 10.7.64 Chapter 10 is implemented a discharge permit may be required. Advice and guidance can be found in the link below: Discharges to surface water and groundwater: environmental permits - GOV.UK (www.gov.uk). The developer may need to seek additional permissions or permits if pursuing this.</p> <p>6.12 APP-012 - Waterbodies in RBMPs: No comment.</p> <p>6.13 Maps of boundaries and waterbodies: No comment.</p> <p>6.14 Appendix 10-2 Water Framework Directive assessment [APP-096]: We note they have added in the missing waterbodies from last time in their assessment. This is welcomed. No concerns or other comments for this document.</p> <p>6.15 Appendix 10-4 Outline Drainage Strategy [APP-098]: As pointed out above, our preference will always be to connect to the public sewers but if that is not a viable option and other solutions are needed the developer may need to seek further permissions (such as permits).</p>	
RR-093	Environment Agency	Acknowledgment of documents reviewed in relation to waste	<p><u>7.0 Waste</u></p> <p>7.1 We have reviewed the following:</p> <ul style="list-style-type: none"> • Chapter 17 (EN010142/APP/6.1), • Chapter 18 (EN010142/APP/6.1), • Land and Crown Land Plans (EN010142/APP/2.2), • Appendix 10-4: Outline Drainage (EN010142/APP/6.2), • Framework Decommissioning Environmental Management Plan (EN010142/APP/7.10), • Appendix 16-1: Transport and Access Legislation, Policy and Guidance (EN010142/APP/6.2). <p>We have comments under the following headings:</p>	The Applicant notes this comment.
RR-093	Environment Agency	Waste hierarchy	<p><u>i. The waste hierarchy & resource management in relation to construction wastes.</u></p> <p>7.2 The developer must apply the waste hierarchy as a priority order of prevention, re-use, recycling before considering other recovery or disposal options. Government guidance on the waste hierarchy in England can be found here: Waste hierarchy guidance (publishing.service.gov.uk)</p>	The Scheme will prioritise waste prevention, followed by preparing for reuse, recycling and recovery and lastly disposal to landfill as per the waste hierarchy. The implementation of the waste hierarchy is referred to within Section 2.9 of the Framework CEMP [EN010142/APP/7.8 (Rev01)] . The Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] have been updated at Deadline 1 to commit the Applicant to applying the waste hierarchy during the operational and decommissioning phases of the Scheme respectively.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-093	Environment Agency	Site Waste Management Plan	7.3 Site Waste Management Plans (SWMP) are no longer a legal requirement. However, in terms of meeting the objectives of the waste hierarchy and your duty of care, they are a useful tool and considered to be best practice.	As outlined in Section 2.9 of the Framework CEMP [EN010142/APP/7.8 (Rev01)] a Construction Resource Management Plan (CRMP) (also referred to as a Site Waste Management Plan) will be prepared by the Principal Contractor, which will specify the waste streams to be estimated and monitored and goals set with regards to the waste produced.
RR-093	Environment Agency	Construction waste estimation	<p><u>ii. Management and reporting systems.</u></p> <p>7.4 Where a development involves any significant construction or related activities, we would recommend using a management and reporting system to minimise and track the fate of construction wastes, such as that set out in PAS402: 2013, or an appropriate equivalent assurance methodology. This should ensure that any waste contractors employed are suitably responsible in ensuring waste only goes to legitimate destinations.</p>	As outlined in Section 2.9 of the Framework CEMP [EN010142/APP/7.8 (Rev01)] , a Construction Resource Management Plan (CRMP) (also referred to as a Site Waste Management Plan) will be prepared by the Principal Contractor, which will specify the waste streams to be estimated and monitored and goals set with regards to the waste produced. The contractor will carry out duty of care checks to ensure that only authorised persons transfer waste, and that the waste is managed legitimately, including checks on waste and broker carrier's registration and Environmental Permits for waste management facilities or proof of exemptions. The CRMP will be finalised with specific measures to be implemented prior to the start of construction.
	Environment Agency	Use of waste on-site - authorisation or permit required.	<p><u>iii. Use of waste on-site - authorisation or permit required.</u></p> <p>7.5 If materials that are potentially waste are to be used on-site, the applicant will need to ensure they can comply with the exclusion from the Waste Framework Directive (WFD) (article 2(1) (c)) for the use of, 'uncontaminated soil and other naturally occurring material excavated in the course of construction activities, etc...' in order for the material not to be considered as waste. Meeting these criteria will mean waste permitting requirements do not apply. Where the applicant cannot meet the criteria, they will be required to obtain the appropriate waste permit or exemption from us. A deposit of waste to land will either be a disposal or a recovery activity. The legal test for recovery is set out in Article 3(15) of WFD as: 'any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. You can find more information on the Waste Framework Directive here: https://www.gov.uk/government/publications/environmental-permitting-guidance-the-waste-framework-directive</p> <p>7.6 More information on the definition of waste can be found here: Check if your material is waste - GOV.UK (www.gov.uk)</p> <p>7.7 More information on the use of waste in exempt activities can be found here: Using waste: waste exemptions - GOV.UK (www.gov.uk)</p> <p>7.8 Non-waste activities are not regulated by us (i.e. activities carried out under the CL:ARE Code of Practice). However, you will need to</p>	<p>As outlined in Table 3-2 of the Framework CEMP [EN010142/APP/7.8 (Rev01)] "Appropriate standard and best practice control measures will be included in the detailed CEMP(s), which may include, but not be limited to: Reusing suitable infrastructure and resources where practicable to minimise the use of natural resources and unnecessary materials (e.g. reusing excavated soil for fill requirements)".</p> <p>Excavated material reuse will be in accordance with the CL:AIRE Code of Practice, Environmental Permit or exemption (Ref 1-6) and reference to this has been included within Table 3-15 of the Framework CEMP [EN010142/APP/7.8 (Rev01)] submitted at Deadline 1.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>decide if materials meet End of Waste or By-products criteria (as defined by the Waste Framework Directive).</p> <p>7.9 More assistance can be found here : Get an opinion from the definition of waste service - GOV.UK (www.gov.uk)</p>	
RR-093	Environment Agency	Movement of waste off-site – Duty of Care & Carriers, Brokers and Dealers Regulations.	<p><u>iv. Movement of waste off-site – Duty of Care & Carriers, Brokers and Dealers Regulations.</u></p> <p>7.10 The Environmental Protection (Duty of Care) Regulations 1991 for dealing with waste materials are applicable to any off-site movements of wastes. The code of practice applies to you if you produce, carry, keep, dispose of, treat, import or have control of waste in England or Wales. The law requires anyone dealing with waste to keep it safe and make sure it's dealt with responsibly and only given to businesses authorised to take it. The code of practice can be found here: Waste_duty_of_care_code_of_practice.pdf (publishing.service.gov.uk)</p> <p>7.11 If the developer needs to register as a carrier of waste, please follow the instructions here: Register or renew as a waste carrier, broker or dealer – GOV.UK (www.gov.uk)</p>	As outlined in Section 3.9 of the Framework CEMP [EN010142/APP/7.8 (Rev01)] a Construction Resource Management Plan (CRMP) (also referred to as a Site Waste Management Plan) will be prepared by the Principal Contractor, which will ensure compliance with waste legislation and codes of practice, specify the waste streams to be estimated and monitored and goals set with regards to the waste produced.
RR-093	Environment Agency	Movement of waste off-site – Duty of Care & Carriers, Brokers and Dealers Regulations Characterisation and classification of waste.	<p><u>v. Movement of waste off-site – Duty of Care & Carriers, Brokers and Dealers Regulations Characterisation and classification of waste.</u></p> <p>7.12 In order to meet the applicant's objectives for the waste hierarchy and obligations under the duty of care, it is important that waste is properly classified. Some waste may be either a hazardous or non-hazardous waste. Obligations including decommissioning activities and any recovery and disposal must comply with regulation at the time of decommissioning (solar panels and batteries). Proper classification of the waste both ensures compliance and enables the correct onward handling and treatment to be applied. In the case of treated wood, it may require high temperature incineration in a directive compliant facility. More information on this can be found here: https://www.gov.uk/how-to-classify-different-types-ofwaste</p>	As outlined in Section 3.9 of the Framework CEMP [EN010142/APP/7.8 (Rev01)] a Construction Resource Management Plan (CRMP) (also referred to as a Site Waste Management Plan) will be prepared by the Principal Contractor, which will ensure compliance with waste legislation and codes of practice, specify the waste streams to be estimated and monitored and goals set with regards to the waste produced.
RR-093	Environment Agency	Capacity of and impact on local waste recycling and disposal facilities	7.13 This applies to waste created during the lifespan of the project, including residual waste removed from site including but not limited to that mentioned in section 17.5.11 and 17.5.17 of the ES. In addition to the above, further consideration should be given to the capacity of local waste recycling and disposal facilities and the impact upon that capacity caused by waste arising during the lifespan of the project, particularly during construction, commissioning, and decommissioning phases, but also when storage batteries and solar panels are replaced during the lifetime of the project.	The Study Areas for waste are defined in line with the IEMA Guidance Ref 1-7) and were provided in the EIA Scoping Report (refer to Appendix 1-1: EIA Scoping Report of the Environmental Statement [APP-051]). The guidance outlines that the waste assessment is conducted at a regional level and where justified at a national level. The assessment is not carried out at a local (county) level. In accordance with the IEMA Guidance (Ref 1-7) the sensitive receptor for the assessment of waste is landfill void capacity. The IEMA Guidance (Ref 1-7) " <i>does not consider waste processing and recovery facilities as sensitive receptors, rather: they are part of a system that has the potential to reduce the magnitude of adverse</i>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-093	Environment Agency	Materials and waste	<p>7.14 Waste batteries from decommissioning this project alone would exceed current battery recycling capacity in Lincolnshire. Furthermore, there are currently no large-scale solar panel recycling facilities in the UK. Based on current capacity, there would be a requirement for end-of life batteries and solar panels to be taken to facilities outside Lincolnshire for storage and recycling. Significant further capacity would have to be created to accommodate both batteries and solar panels in Lincolnshire if the waste was to be disposed of locally, and there may be a need to export them for recycling if capacity in the UK is not significantly increased.</p>	<p><i>impacts associated with waste generation and disposal. Waste processing and recovery facilities are, hence, different to landfills, in that the latter are finite resources."</i></p> <p>Waste arisings associated with maintenance activities such as component replacement during the operational life of the Scheme will be managed in the same way as waste from the final decommissioning of the Scheme. Operational waste cannot be quantified until detailed design, however quantities are anticipated to be less than during decommissioning.</p> <p>There are already organisations around the UK and Europe specialising in solar recycling, such as PV Cycle and the European Recycling Platform. They are working with solar developers to minimise electrical waste and recycling old panels in line with the Waste Electrical and Electronic Equipment (WEEE) Regulations (Ref 1-8). In addition, companies like SECONDSOL offer a marketplace service for the purchase and selling of second-hand PV panels and equipment, where there is still a good level of life in the equipment remaining. Panels that have developed faults or damage can also be refurbished and repowered by specialist companies and the manufacturers and resold or reinstalled. The Applicant will adhere with the industry best practice outlined in Solar Power Europe's Lifecycle Quality Best Practice Guidance.</p> <p>As outlined in paragraph 18.18.11 of Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049], it is anticipated that the solar panel waste generated by the Scheme during operation and decommissioning would be managed by specialist regional or national facilities, and that such facilities would be developed over the operational period in response to demand generated by the UK-wide solar panel industry as the prevalence of solar projects increases in line with government targets. This assumption also applies to batteries. The capacity of such facilities is not expected to be influenced by other non-solar farm projects in the surrounding area because the facilities will only be managing solar panel waste.</p> <p>Private sector waste companies will develop these facilities to respond to market demands and regulatory requirements. Current solar panel waste generation is low, so there is little demand for facilities, hence the limited available capacity presently. Therefore, it is expected that facilities which reuse, recycle, or recover end-of-life solar panels will be developed as the quantities of this waste stream increase. The Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 (Ref 1-8) and The Waste Batteries and Accumulators Regulations 2009 (Ref 1-9) place obligations on those who place solar panels and batteries on the market to finance the costs of collection, treatment, recovery and environmentally sound</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>disposal e.g. through a compliance scheme. The landfill tax also strongly incentivise reuse, recycling and recovery.</p> <p>As outlined in paragraph 18.18.13 of Chapter 18 Cumulative effects and Interactions of the Environmental Statement [APP-049] the 'Proximity Principle', indicates that it is neither necessary or realistic to require capacity to be available within Lincolnshire, either now or in the future, to recycle all the solar panel waste that may be generated by solar farms in the county.</p> <p>As set out in the response above, the study areas for waste are defined in line with the IEMA Guidance (IEMA guide to: Materials and Waste in Environmental Impact Assessment, Guidance for a proportionate approach, 2020 (Ref 1-7) and were provided in Appendix 1-1: EIA Scoping Report of the Environmental Statement [APP-051]. The IEMA Guidance outlines that the waste assessment is conducted at a regional level and, where justified, a national level. The assessment is not carried out at a local (county) level. In addition, as outlined in the Ministry of Housing, Communities and Local Government, Ministry of Housing, Communities & Local Government (2018 to 2021) and Department for Levelling Up, Housing and Communities Waste Guidance (published 2015) the self- sufficiency and proximity principles do not require each waste planning authority to manage all of its own waste. <i>"Though this should be the aim, there is no expectation that each local planning authority should deal solely with its own waste to meet the requirements of the self-sufficiency and proximity principles. Nor does the proximity principle require using the absolute closest facility to the exclusion of all other considerations. There are clearly some wastes which are produced in small quantities for which it would be uneconomic to have a facility in each local authority. Furthermore, there could also be significant economies of scale for local authorities working together to assist with the development of a network of waste management facilities to enable waste to be handled effectively. The ability to source waste from a range of locations/organisations helps ensure existing capacity is used effectively and efficiently, and importantly helps maintain local flexibility to increase recycling without resulting in local overcapacity."</i></p>
RR-093	Environment Agency	Disposal of end-of-life batteries and PV panels	7.15 Batteries and solar panels are growing waste streams and we anticipate that an increased capacity will be created during the lifespan of the project. However, with the other proposed solar projects in the area, all of which will be constructed and therefore likely refreshed and decommissioned at similar times, there is a risk that capacity to store, recycle, and dispose of any waste will exceed what is available locally and nationally. Although overall capacity for battery storage and recycling is highly likely to grow during the lifespan of the project, based on currently available battery and solar panel technology we do	Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048], Table 17-16 summarises an indicative list of expected lifetimes of components (including solar panels and batteries) which have been taken into consideration in the waste and materials assessment.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			not expect solar panels or the batteries used in Battery Energy Storage Systems (BESS) to last for the duration of the project, anticipating that they would be replaced at least once, possibly several times during the lifetime of the project, this should be taken into consideration by the applicant when considering recycling and disposal of waste batteries and solar panels during the lifetime of the project.	
RR-093	Environment Agency	Hazardous waste streams	7.16 Dependent on the type of solar panel used, it is possible that materials with hazardous properties could be used in their construction, all waste must be assessed following WM3 waste assessment guidance and transported and disposed of following duty of care.	The Applicant notes this comment. All waste will be assessed following WM3 waste assessment guidance (Guidance on the Classification and Assessment of Waste (1st Edition v1.2.GB, 2021) Technical Guidance WM3 (Ref 1-10)) and transported and disposed of following duty of care.
RR-093	Environment Agency	Summary of matters related to BESS	<u>8.0 Battery energy storage systems (BESS)</u> 8.1 To add to the comments above, specifically in relation to BESS, we have the following comments:	The Applicant notes this comment.
RR-093	Environment Agency	Summary of matters related to BESS	8.2 BESS facilities are not regulated under the Environmental Permitting Regulations regime.	The Applicant notes this comment.
RR-093	Environment Agency	Summary of matters related to BESS	8.3 Battery storage falls within the scope of the UK's producer responsibility regime for batteries and other waste legislation. This creates additional lifecycle liabilities which must be understood and factored into project costs. Batteries have the potential to cause harm to the environment if stored inappropriately. For example, they may be subject to a fire as the chemical contents escape from the casing.	The Applicant notes this comment. The construction, and ongoing operation (including safety requirements), maintenance and decommissioning costs and responsibilities of the battery storage proposed by the Scheme have been assessed. Section 7 of the Framework Battery Safety Management Plan (BSMP) [APP-225] , outlines in detail the measures provided to manage safety matters including fires through the course of the Scheme's operation.
RR-093	Environment Agency	Impact of fire water from BESS	8.4 The key concern for the Environment Agency is pollution of nearby watercourses from fire water in the event of an incident.	As set out within Section 3.9 of Appendix 10-4: Outline Drainage Strategy of the Environmental Statement [APP-098] , the drainage design provides for fire water containment by providing a penstock arrangement on the lined swales surrounding each BESS. However, as outlined in paragraph 5.3.2 of the Framework Battery Safety Management Plan [APP-225] and discussed with Lincolnshire Fire & Rescue Service, it is not anticipated that active fire-fighting will be undertaken as this can spread chemicals used in the process and which are potentially harmful to the water environment. Instead, any apparatus or containers that catch fire will be allowed to burn out. Water will be sprayed onto adjacent containers to keep them cool and reduce the risk of the fire spreading. The water used will therefore be less likely to be contaminated but will still be directed to the fire water storage areas from where decisions about suitable disposal can be made post incident. In the unlikely event of fire water being discharged, the runoff will be contained as per the Drainage Strategy and tested/treated before being allowed to discharge to the local watercourses.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-093	Environment Agency	Battery fire safety management	8.5 Fire water storage calculations are based on the assumption that a maximum of one BESS would be involved in a fire at any given time. For areas where 2 or more than BESS are located together, the applicant must ensure that measures are in place to prevent the spread of fire from one BESS to another adjacent unit. These measures should as a minimum include a 6-metre fire break between BESS unit.	<p>As set out within Table 2-1 of the Framework Battery Safety Management Plan (BSMP) [APP-225], the BESS areas will be designed to integrate pressure fed fire hydrants and/or static water tanks for firefighting.</p> <p>Water provision will be designated for the cooling of adjacent BESS equipment. This will meet current UK National Fire Chiefs Council (NFCC) guidelines (Ref 1-11) which stipulate tanks and / or hydrants should be capable of delivering no less than 1,900 litres per minute for at least 2 hours.</p> <p>As referenced in Table 2-1 of the Framework BSMP [APP-225], the firefighting water requirement will be fully assessed at the detailed design stage based upon BESS fire & and explosion test data by an independent Fire Protection Engineer and water storage volumes will be agreed with Lincolnshire FRS during the detailed design.</p> <p>The NFCC will be revising their Grid Scale Energy Storage System Planning – Guidance for Fire and Rescue Services (Ref 1-11) in late 2024. The draft guidelines have reduced the recommended equipment spacing distances between BESS equipment and the volume of water to be provided for fire safety. Specifically, they allow reduced separation distances between BESS enclosures if suitable design features can be introduced. As set out in paragraph 7.3.10 of the Framework BSMP [APP-225], if reducing distances between BESS enclosures, a clear, evidence-based case for the reduction will be shown in the detailed design phase and supported by heat flux test data i.e. UL 9540A unit or installation testing and / or third-party fire and explosion testing.</p> <p>The equipment spacing proposed for the final design must be validated by additional site-specific risk analysis and consequence modelling and approved by a BESS specialist independent Fire Protection Engineer and must be agreed with Lincolnshire FRS.</p> <p>The above principles are secured through Requirement 6 of the draft DCO [EN010142/APP/3.1(Rev03)], which sets out that a detailed BSMP is to be prepared and must be in substantial accordance with the Framework BSMP.</p>
RR-093	Environment Agency	Battery fire safety management	8.6 Related to this, each site and each site operator which has a BESS installation should have emergency response/contingency plans which detail how the risks as above will be managed and environmental impacts prevented, reduced, removed or contained. The Department for Energy Security and Net Zero: Health and safety in grid scale electrical energy storage systems (accessible webpage) - GOV.UK (www.gov.uk) provides guidance on emergency planning. Any	<p>The Applicant notes these stipulations.</p> <p>A Framework BSMP [APP-225] has been prepared with input from local Fire and Rescue Services alongside this Application which provides mitigation and management measures for thermal runaway safety risks posed by the BESS in the Scheme.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			plan for each site must include the Environment Agency Incident Number 0800 80 70 60 for prompt operator reporting so that the Environment Agency can risk assess the incident and risk to the environment.	<p>The detailed design phase of individual BESS sites will consider the lifecycle of the battery system from installation to decommissioning. At the detailed design stage, risk assessment tools will be utilised together with detailed consequence modelling to provide a comprehensive site operations and emergency response safety audit.</p> <p>At the time of installation, the Applicant will work closely with the Fire & Rescue Service to provide all relevant information on BESS and site design features to inform all necessary hazard and risk analysis studies and assist in the development of comprehensive Risk Management (RM) and Emergency Response Plans (ERP).</p>
RR-093	Environment Agency	Battery fire safety management	8.7 With the above in mind, we note it is proposed to include requirement 6 in Schedule 2 of the Development Consent Order to secure the detail of a battery safety management plan. We further note from criterion g(iv) of work number 2 (BESS) on page 38 that the storage system is to include an impermeable membrane surrounding it which directs fire water to a swale for containment and a sump and drain valve to allow the extraction of contaminated fire water. Whilst this is welcomed, it is suggested that items listed as to be agreed via requirement 6 should also secure the precise detail of these containment measures so as to help ensure our concern is addressed.	The Applicant can confirm that the Framework BSMP [APP-225] includes at Section 7.8 details of the drainage and containment requirements for the BESS. These requirements will need to be agreed with the relevant authorities within the Battery Safety Management Plan for it to be finalised.
RR-093	Environment Agency	Battery waste	8.8 Finally, when a battery within a battery storage unit ceases to operate, it will need to be removed from site and dealt with in compliance with waste legislation. The party discarding the battery will have a waste duty of care under the Environmental Protection Act 1990 to ensure that this takes place. Many types of batteries are classed as hazardous waste which creates additional requirements for storage and transport. The Waste Batteries and Accumulators Regulations 2009 also apply. These introduced a prohibition on the disposal of batteries to landfill and incineration. Batteries must be recycled or recovered by approved battery treatment operators or exported for treatment by approved battery exporters only	As set out within the Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] , waste duty of care will be followed for all waste generated on site and all waste will be managed in accordance with relevant legislation at the time. The Applicant acknowledges that the Waste Batteries and Accumulators Regulations 2009 (Ref 1-9) place obligations on those who place batteries on the market to finance the costs of collection, treatment, recovery and environmentally sound disposal e.g. through a compliance scheme.
RR-093	Environment Agency	Summary of matters related to securing a permit	<p><u>9.0 Environmental Permitting and the Protective Provisions within the Development Consent Order.</u></p> <p>9.1 Under normal circumstances, under the Environmental Permitting (England and Wales) Regulations 2016, a permit is required for installations, medium combustion plant, specified generator, waste or mining waste operations, water discharge or groundwater activities, or work on or near a main river or sea defence.</p>	The Applicant notes this comment, and the acknowledgment below that the DCO seeks to disapply these permitting requirements.
RR-093	Environment Agency	Water and flood risk	9.2 We note from page 10 (criterion e) of the draft DCO that Regulation 12 (requirement for environmental permit) of the	The Applicant notes this comment.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			Environmental Permitting (England and Wales) Regulations 2016(c) will not apply in relation to the carrying out of any development, activity or operation for the purposes of the authorised development, or in connection with the authorised development in respect of a flood risk activity only.	
RR-093	Environment Agency	Protective Provisions in draft DCO	9.3 We do not agree to the set of Protective Provisions included in the draft DCO and we will only agree to the disapplication of the requirement for the Flood Risk Activity Permit once we have agreed with wording of them.	The Applicant notes the position in respect of not agreeing to the disapplication of the permitting requirements until protective provisions are agreed.
RR-093	Environment Agency	Standard Protective Provisions	9.4 The Environment Agency is currently reviewing its Standard Protective Provisions which all applicants are expected to enter into before we will agree to disapplication. It expects to complete this exercise by the end of August and will then update the applicant and the Examining Authority on its position regarding the acceptability of the form of protective provisions put forward by the applicant.	The Applicant awaits the updated protective provisions from the Environment Agency, and is ready to discuss these as soon as the Environment Agency is able to provide these and any other comments on the protective provisions.
RR-093	Environment Agency	Standard Protective Provisions	9.5 Given that we do not anticipate any fundamental disagreement, we are confident that we should be able to agree the protective provision wording with the applicant comfortably within the examination period.	The Applicant notes this comment.
RR-093	Environment Agency	Anglian Water Authority Act 197	<u>10.0 Anglian Water Authority Act 1977</u> 10.1 We note that the whole of the Anglian Water Authority Act (AWAA) 1977 is listed in Schedule 3 of the DCO (Legislation to be disapplied). We would like more information about why the whole Act is being applied for to help us understand the impact it may have for us. Please can we be provided with a precis as to the relevance of each section of the AWAA for us to consider.	The Applicant has provided further information on its basis to disapply the AWAA to the Environment Agency to address its questions. It is noted that Schedule 3 only seeks to disapply those sections of the AWAA (and other legislation captured within the Schedule) <i>"in so far as they relate to the construction of any numbered work or the carrying out of any operation required for the purpose of, or in connection with, the construction, operation, maintenance or decommissioning of the authorised development"</i> . Where there is no conflict between sections of the AWAA and the authorised development these will remain operative and unaffected by the Order. It is also noted that the recently made solar Orders within the vicinity of the Scheme (Gate Burton Energy Park Order 2024 and Cottam Solar Farm Order 2024) both included the AWAA within their schedule of legislation to be disapplied.
RR-093	Environment Agency	Anglian Water Authority Act 197	10.2 We wish to reserve the right to comment further on this topic once we have this information. Pending our further consideration of this matter, we do not agree to the Anglian Water Authority Act being disapplied.	The Applicant notes that this matter is reserved while the parties continue discussions.
RR-093	Environment Agency	Summary of matters in Relevant Representation	<u>11.0 Requirements</u> 11.1 The Environment Agency wishes to be a specific named consultee in respect of any scheme to remediate the site as referred to in our comments in paragraph 5.7 above plus Schedule 2, Requirement 6 (1) (battery safety management), Requirement 7 (1) (landscape and ecological management plan); Requirement 8 (1) (biodiversity net gain strategy); Requirement 12 (1) (construction environmental management plan);	The Applicant responds to the point above in respect of remediation separately. However, the Applicant agrees to include the Environment Agency as a consultee within Schedule 2, Requirement 6 (1) (battery safety management), Requirement 7 (1) (landscape and ecological management plan); Requirement 8 (1) (biodiversity net gain strategy); Requirement 12 (1) (construction environmental management plan);

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			(biodiversity net gain strategy); Requirement 12 (1) (construction environmental management plan); Requirement 13 (1) (operational environmental management plan); and Requirement 20 (1-4) (decommissioning and restoration).	Requirement 13 (1) (operational environmental management plan); and Requirement 20 (1-4) (decommissioning and restoration), and has provided a version of the draft DCO [EN010142/APP/3.1(Rev03)] with these changes at Deadline 1.
RR-093	Environment Agency	Draft DCO	11.2 We would request that for the avoidance of doubt the words “following consultation with the Environment Agency” are inserted after “relevant planning authority” in each of the above. This will give us an opportunity to comment on the detailed mitigation and management schemes, secured post consent, to ensure adequate protection and enhancement of the environment.	The Applicant agrees to this wording and has provided a version of the draft DCO [EN010142/APP/3.1(Rev03)] with these changes at Deadline 1.
RR-093	Environment Agency	Summary of matters in Relevant Representation	<u>12.0 Further representations</u> 12.1 In summary, we can confirm that we have no objection to the principle of the proposed development, as submitted. The issues outlined above are all capable of resolution and we look forward to receiving additional information to resolve our outstanding concerns. We will also continue to work with the applicant to agree the wording in the protective provisions.	The Applicant notes this comment.
RR-093	Environment Agency	Summary of matters in Relevant Representation	12.2 We reserve the right to add or amend these representations, including requests for DCO Requirements and protective provisions should further information be forthcoming during the course of the examination on issues within our remit.	The Applicant notes this comment.
RR-177	Marine Management Organisation	Summary of matters in Relevant Representation	<u>1. General Comments</u> 1.1 The MMO has reviewed the draft DCO (EN010142/APP/3.1) and Deemed Marine Licence (“DML”) (Schedule 16) on a without prejudice basis and has provided comments on the wording within the DCO and DML where this would fall within the MMO’s remit as the regulator under the Marine and Coastal Access Act 2009 (“2009 Act”). The MMO has major concerns in relation to the inclusion of a DML.	The Applicant welcomes the detailed response from the MMO. The Applicant is aware of the recent decisions of the Secretary of State for Energy Security and Net Zero (“SoS”) in relation to the Gate Burton Energy Park Order 2024 and the Cottam Solar Project Order 2024, in which the made Orders did not include the proposed Deemed Marine Licence (“DML”) and associated articles. The Applicant has included the DML and associated drafting in its draft DCO on a precautionary basis but accepts the decision of the SoS on the other recently made Orders. The Applicant has therefore amended its draft DCO [EN010142/APP/3.1(Rev03)] to:
RR-177	Marine Management Organisation	Exempt activities – Marine licence	<u>2. Exempt Activities</u> 2.1 Article 4 of the Marine Licensing (Exempted Activities) Order 2011 (“2011 Order”) states that a marine licence is not needed for an activity that is an exempt activity.	(a) delete the “MMO” and accompanying definition in Article 2; (b) delete Article 45 (Deemed marine licence); (c) delete Schedule 16 (Deemed marine licence under the 2009 Act); (d) amend Article 36 (Consent to transfer the benefit of the Order) to delete sub-paragraph (4); and (e) delete reference to Schedule 16 in the provisions for the protection of the Canal & River Trust in Part 4 of Schedule 15.
RR-177	Marine Management Organisation	Exempt activities – Marine licence	2.2 Article 35(1) of the 2011 Order states “Article 4 applies to a deposit or works activity carried on wholly under the seabed in connection with the construction or operation of a bored tunnel.	
RR-177	Marine Management Organisation	Exempt activities – Marine licence	2.3 The Applicant is proposing within their Environmental Statement (ES) Chapter 10: Water Environment (EN010142/APP/6.1) to carry out water crossing via trenchless (non-intrusive) techniques for cabling by way of a bored tunnel using horizontal directional drilling. The Applicant, within their Environmental Statement Chapter 10: Water	The Applicant has amended the Explanatory Memorandum [EN010142/APP/3.2(Rev01)] accordingly.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			Environment (EN010142/APP/6.1) 10.7.20 has proposed that a reasonable worst-case scenario for the River Trent would involve drilling and installing the cable duct to a maximum of 25m depth and a minimum of 5m beneath the bed of the river.	The Applicant considers that these amendments address all the points raised by the MMO in its relevant representation.
RR-177	Marine Management Organisation	Exempt activities – Marine licence	2.4 On the basis of the information reviewed on the PINS website, the MMO does not consider that a DML is able to be granted under a DCO for the purposes of the trenchless water-crossings because no marine licence is required.	
RR-177	Marine Management Organisation	Exempt activities – Marine licence	2.5 It would appear to the MMO that the Applicant is seeking to obtain a DML for drilling activities or other forms of tunnelling which of themselves will not be considered to be a bored tunnel to which the exemption in the 2011 Order applies and is seeking to have these activities authorised by way of a DML. The MMO note however that the Applicant has provided no detail as to what these activities would entail, and they have not assessed the environmental implications of these activities.	
RR-177	Marine Management Organisation	Exempt activities – Marine licence	2.6 The Planning Act 2008 has the effect of altering the mechanism, for the purposes of a DCO, by which a marine licence can be granted. It does not, however, alter the process by which an application for a marine licence is determined under section 69 of the 2009 Act.	
RR-177	Marine Management Organisation	Exempt activities – Marine licence	2.7 In the absence of the required detailed information from the Applicant, the MMO is unclear how the DML could be granted, as the MMO itself would be unable to make this determination on the information currently provided by the Applicant. The MMO has significant concerns that in the current circumstances, any decision of the SoS to grant a DML could be open to successful challenge.	
RR-177	Marine Management Organisation	Draft DCO	<u>3. DCO – Part 6, Article 35 - Consent to transfer the benefit of the Order</u> 3.1 Article 35 DCO It is the MMO's stated position that any DML granted under a DCO should be regulated by the provisions of the 2009 Act, and in respect of this issue, specifically by all provisions of section 72 2009 Act.	
RR-177	Marine Management Organisation	Draft DCO	3.2 As set out in Advice Note Eleven, Annex B – Marine Management Organisation National Infrastructure Planning (planninginspectorate.gov.uk) where a developer chooses to have a marine licence deemed by a DCO, we, the MMO, "will seek to ensure wherever possible that any deemed licence is generally consistent with those issued independently by the MMO." 3.3 As you are aware, developers can seek consent for a marine licence directly with the MMO, reinforcing that in respect of marine licences, the DCO process is nothing more than a mechanism for	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>granting a marine licence – it is not a vehicle to amend established process and procedures, such as those for the transfer of a marine licence.</p> <p>3.4 As the guidance further sets out, we, the MMO are responsible for enforcing marine licences regardless of whether these are 'deemed' by a DCO or consented independently, and it is therefore fundamental that all marine licences are clear and enforceable, and consistency is a key element in achieving this.</p> <p>3.5 Section 72(7)(a) 2009 Act permits a licence holder to make an application for a marine licence to be transferred, and where such an application is approved for the MMO to then vary the licence accordingly (s. 72(7)(b) 2009 Act).</p>	
RR-177	Marine Management Organisation	Draft DCO	<p><u>Decision to transfer or application to transfer</u></p> <p>3.6 In considering the proposed provisions of Article 35 DCO, Articles 36(1)(a) and 36(1)(b) would no longer require the licence holder (undertaker) to make an application for a licence to be transferred and it is simply their decision to make the transfer – this is a clear departure from the 2009 Act. Further, the newly introduced process would involve the SoS providing consent to the transfer, rather than the MMO, as the regulatory authority for marine licences, considering the merits of any application for a transfer.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>3.7 Further, if it is the intention of the Applicant for a DML to be transferred by them as the undertaker under the terms of the DCO and outside of the established procedures under the 2009 Act (which the MMO opposes) why is it considered necessary or appropriate for the SoS to 'approve' the transfer of the DML, even with their obligation to consult the MMO? We remain strongly of the view that it should be the MMO.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>3.8 Although the process proposed has not been tested, it may be the case that the Applicant/undertaker faces unnecessary delay as it is not clear that there will be a process in place to deal with requests of this nature and it is not clear what any consultation period would be.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p><u>Duty to consult MMO</u></p> <p>3.9 It is noted that the SoS "must consult" the MMO (Article 36(4) DCO) – however the obligation goes no further than this, the SoS is not obligated to take into account the views of the MMO in providing its consent and there is no obligation for the MMO to be informed of the decision of the SoS. In the regulatory sphere it strikes us as highly unusual that a decision to transfer any DML is not the decision of the regulatory authority in that area.</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-177	Marine Management Organisation	Draft DCO	<p><u>Power to vary the licence following a transfer</u></p> <p>3.10 Despite the proposed changes to the process of transferring a DML it remains that neither the licence holder/undertaker nor the SoS has any power to actually vary any terms of a DML and it will still therefore be necessary for the MMO to take steps to vary a DML to reflect that it has been transferred to another entity. To our mind the proposed mechanism for transfer of a DML does not actually work and in fact does little more than complicate the process.</p> <p>3.11 There are also very real practical concerns as to how the proposed process would work in practice. The transfer of the DML would happen first, and then the DML would need to be varied. After the transfer of the DML, the new licensee/licence holder would have a marine licence which would still be in the name of the licensee who had transferred the DML. The new licence holder/licensee would have no authorisation to carry out any acts until the variation had taken place and until the variation had been affected the old licence holder would remain liable for any actions undertaken. The procedure under s.72 of the 2009 Act avoids this issue.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p><u>Transfer and lease of a marine licence</u></p> <p>3.12 Article 36(1)(a) DCO specifies the transfer of the whole of a DML and Article 36(1)(b) specifies a grant to a lessee for an agreed period. There is however no mechanism either in the DCO or indeed in the 2009 Act for a marine licence to be 'leased', specifically there is no provision for a marine licence 'reverting' to the licence holder after the agreed lease period – in practical terms it would be necessary to vary the marine licence to change the details of the licence holder at the beginning of the agreed lease period and then again at the end of the agreed lease period.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p><u>Article 36 (1)(b) use of the term 'grant'</u></p> <p>3,14 We should be grateful for clarification on the use of the term 'grant' in Article 35(1)(b) and 36(2) DCO in respect of granting the benefit of the licence to a lessee. Articles 35(1)(a) and 36(2) DCO refer to the transfer of the licence - as is the language of Art 72 of the 2009 Act. As the granting of licences fall under s.69 of the 2009 Act and not s.72 of the 2009 Act, can the Applicant provide further explanation of its intention in this regard and its use of the term?</p>	
RR-177	Marine Management Organisation	Draft DCO	<p><u>Enforcement</u></p> <p>3.15 It is essential as the regulatory authority in the marine environment that we, the MMO are always fully aware who has the benefit of marine licences in order that we can carry out our regulatory function and where necessary take enforcement action. The mechanism currently proposed by the Applicant is proposing for the transfer of a DML, which departs from this established process without</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			clear justification as to why such a departure is necessary or appropriate in the circumstances.	
RR-177	Marine Management Organisation	Draft DCO	<p><u>Conclusion</u></p> <p>3.16 It is therefore the MMO's position that should a DML be granted, the DML should be regulated in accordance with the provisions of the 2009 Act, in this context specifically all provisions of s.72 of the 2009 Act.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p><u>4. DCO – Part 6, Article 42 - Arbitration</u></p> <p>4.1 It is not clear from the current provisions of either the DCO or the DML that the arbitration (article 43 and Schedule 14) is not the applicable dispute resolution mechanism in respect of any DML.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>4.2 Appeals are already available to the Applicant in the form of an escalated internal procedure and judicial review, and therefore, including any additional appeal mechanism within the DCO and DML is unnecessary.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>4.3 The Marine Licensing (Licence Application Appeals) Regulations 2011 apply a statutory appeals process to the decisions that the MMO make regarding whether to grant or refuse a licence or conditions which are to be applied to a marine licence. However, they do not include an appeal process to any decisions the MMO is required to give in response to an application to discharge any conditions of a marine licence issued directly by the MMO.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>4.4 Therefore, if the DCO were to be granted with the proposed appeal process included, this would not be consistent with the existing statutory processes. This amendment would be introducing and making available to this specific Applicant, a new and enhanced appeal process which is not available to other marine licence holders, creating an unlevel playing field across the regulated community. These proposals go against the statutory functions laid out by Parliament. The private nature of the arbitration process does not align with the public functions and duties of the MMO. The removal of the MMO's decision-making function, and its placement into the hands of a private arbitration process, is inconsistent with the MMOs legal function, powers and responsibilities, something which was never intended by Parliament in enacting the Planning Act 2008 or the 2009 Act. The MMO also consider that arbitration would not be consistent with p.4 of Annex B of the PINS Guidance Note 11, which states that "the MMO will seek to ensure wherever possible that any deemed licence is generally consistent with those issued independently by the MMO". Inclusion of a different mechanism for determination of</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			disputes in respect of DMLs would not be consistent with marine licences issued independently by the MMO.	
RR-177	Marine Management Organisation	Draft DCO	4.5 In addition to this, the MMO emphasise that it is an open and transparent organisation that actively engages, and maintains excellent working relationships with, industry and those it regulates. The MMO discharges its statutory functions and responsibilities in a manner which is both timely and robust in order to fulfil the public functions vested in it by Parliament. The scale and complexity of Nationally Significant Infrastructure Projects creates no exception in this regard and indeed it follows that where decisions are required to be made, or approvals given, in relation to these developments of significant public interest, only those bodies appointed by Parliament should carry the weight of that responsibility.	
RR-177	Marine Management Organisation	Draft DCO	<u>5. Licensable Activities and Procedure</u> 5.1 It is essential that all activities are properly detailed and fully particularised in the DCO for the purposes of a DML.	
RR-177	Marine Management Organisation	Draft DCO	5.2 It appears to the MMO that the Applicant is primarily proposing to carry out an activity which falls within an exemption. It is the MMO's position that the Applicant has two options; <ul style="list-style-type: none"> • a. Have no DML, and at such a time as it becomes necessary, if ever, for the Applicant to make an application for a marine licence to the MMO; or b. Provide the necessary information and detail now to the MMO of any marine licensable activities which do not fall under an exemption, which can be fully assessed and upon which the MMO can make a reasoned determination in accordance with s. 69 of the 2009 Act, and which would withstand any challenge. 	
RR-177	Marine Management Organisation	Draft DCO	5.3 As set out above in Section 2, the Nationally Significant Infrastructure Projects process only alters the mechanism by which a marine licence is granted, the process remains the same. If the Applicant was making an application for a marine licence, the MMO would require the Applicant to provide the information as set out below, without which the MMO would be unable to determine the application.	
RR-177	Marine Management Organisation	Draft DCO	5.4 In order to progress any deemed marine licence, the Applicant will need to provide the following information: - <ul style="list-style-type: none"> • Full details of any licensable activity in line with s.66 of the 2009 Act and at what stage these would take place- construction, operation (maintenance) and decommissioning; • Worst case scenario area and volume size of impacts for each activity; and 	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<ul style="list-style-type: none"> Full assessment of the worst-case scenario as part of the EIA so a holistic assessment can be made on the whole project. <p>Details which the Applicant would need to provide to the ExA which have not yet been provided, include but are not limited to, a clearly defined programme of works which includes marine licensable activities which are not covered by an exemption. A programme of works should detail all methodology and include the maximum dimensions and equipment to be used. This should specifically relate to the named activity. There should also be an EIA, a Habitats Regulations Assessment (HRA), Marine Plan Policy Assessment (MPPA) and a Water Framework Directive (WFD) compliance assessment.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p><u>6. Deemed Marine Licence</u></p> <p>6.1 As set out above, the MMO request the DML is removed from the DCO.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>6.2 It has been difficult to assess whether or not the conditions the Applicant has included in the DML, which are under the headings of notifications and inspections, pollution prevention, pre-construction plans and documentation, post-construction, maintenance and decommissioning, are sufficient due to the lack of detail on the specific activities.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>6.3 Conditions in a marine licence regulate the activities that are to be undertaken, and set out the methods by which those activities are carried out, exerting the necessary controls in order to protect the environment, human health and to prevent interference with legitimate uses of the sea, along with any other matters as the MMO thinks relevant.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>6.4 In the absence of sufficient detail, or the appropriate assessments from the Applicant, the MMO is unable to determine whether the conditions proposed by the Applicant in the DML are appropriate in the circumstances.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>6.5 However, should the SoS be minded to include the DML, which we strongly advise against, without prejudice comments on the draft DML have been provided in Table 1 below, noting that if further information is provided, this would require review and update.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>6.6 The MMO also note some conditions in relation to the environmental statement and other documents of which the information on the activities is not clear.</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-177	Marine Management Organisation	Draft DCO	<p>6.7 The MMO utilises Paragraph 55 of the National Planning Policy Framework which makes clear that planning conditions should be kept to a minimum, and only used where they satisfy the following tests:</p> <ul style="list-style-type: none"> • necessary; • relevant to planning; • relevant to the development to be permitted; • enforceable; and <p>precise.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>DML Section (1) Interpretation</p> <p>Current wording "licence holder" means the undertaker and any agent, contractor or sub-contractor acting on its behalf;</p> <p>Without Prejudice Comments The MMO request that this is deleted.</p>	
		Draft DCO	<p>DML Section (2) Addresses for notices</p> <p>Current wording (1) Marine Management Organisation Marine Licensing Lancaster house Newcastle Business Park Newcastle upon Tyne NE4 7YH info@marinemanagement.org.uk Tel: 0300 123 1032;</p> <p>Without Prejudice Comments (1) (a) Marine Management Organisation Marine Licensing Team Lancaster House Hampshire Court Newcastle Business Park Newcastle upon Tyne NE4 7YH info@marinemanagement.org.uk Tel: 0300 123 1032</p> <p>(1)(b) Marine Management Organisation Beverley Office First Floor Crosskill House Mill Lane Beverley</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			HU17 9JB Email: beverley@marinemanagement.org.uk Phone: 0208 026 0519	
RR-177	Marine Management Organisation	Draft DCO	<p>DML Section (3) Details of licensed marine activities</p> <p>Current wording 3.(1) Subject to the licence conditions, this licence authorises the undertaker (and any agent or contractor acting on their behalf) to carry out the following licensable marine activities under section 66(1) (licensable marine activities) of the 2009 Act which— form part of, or are related to, the authorised development; and are not exempt from requiring a marine licence by virtue of any provision made under section 74 of the 2009 Act.</p> <p>Without Prejudice Comments As set out above in Section 5 this should set out clearly the activities as defined in S.66 of the 2009 Act.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>DML Section (3) Details of licensed marine activities</p> <p>Current wording Add provision</p> <p>Without Prejudice Comments MMO request it is made clear in this section how long the licence will last.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>DML Section (3) Details of licensed marine activities</p> <p>Current wording 5. The provisions of section 72 (variation, suspension, revocation and transfer) of the 2009 Act apply to this licence except that the provisions of section 72(7) relating to the transfer of the licence only apply to a transfer not falling within article 36 (consent to transfer the benefit of the Order).</p> <p>Without Prejudice Comments</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			This provision needs to be removed, along with the other sections of Article 5 of the DCO - See Section 5.	
RR-177	Marine Management Organisation	Draft DCO	<p>DML Section (3) Details of licensed marine activities</p> <p>Current wording 6. With respect to any condition which requires the licensed activities to be carried out in accordance with the plans, protocols or statements approved under this Schedule, the approved details, plan or project are taken to include any amendments that may subsequently be approved in writing by the MMO.</p> <p>Without Prejudice Comments MMO requests that the following is added: “<i>subsequent to the first approval of those plans, protocols or statements provided it has been demonstrated to the satisfaction of the MMO that the subject matter of the relevant amendments do not give rise to any materially new or materially different environmental effects to those assessed in the environmental information.</i>”</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>DML Section (3) Details of licensed marine activities</p> <p>Current wording 7. Any amendments to or variations from the approved details must be in Accordance with the principles and assessments set out in the environmental statement. Such agreement may only be given in relation to immaterial changes where it has been demonstrated to the Satisfaction of the relevant planning authority or that other person that the subject matter of the agreement sought is unlikely to give risk to any materially new or materially different environmental effects from those assessed in the environmental statement.</p> <p>Without Prejudice Comments MMO requests that this is updated to state: “<i>...satisfaction of the MMO that the subject matter of the relevant amendments do not give rise to any Materially new or materially different environmental effects to those assessed in the environmental information.</i>”</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>DML Section Design parameters</p> <p>Current wording</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			Add provision	
			Without Prejudice Comments	
			Measurements and values provided in relation to the licensable activities should be worst case scenario. Details should be of maximum value.	
			Approximations must be avoided.	
RR-177	Marine Management Organisation	Draft DCO	DML Section	
			Notifications and inspections	
			Current wording	
			8. The licence holder must inform the MMO in writing of the commencement of the first licensed activity at least 24 hours prior to such commencement.	
			Without Prejudice Comments	
			8. The undertaker must inform the MMO at both addresses of Paragraph 2, in writing of the commencement of the first licensed activity at	
			least five days prior to such commencement.	
RR-177	Marine Management Organisation	Draft DCO	DML Section	
			Notifications and inspections	
			Current wording	
			9. (1) The undertaker must provide the name, address and function of any agent, contractor or sub-contractor that will carry out any licensed activity listed in this license on behalf of the undertaker to the MMO no less than 24 hours before the agent, contractor or sub- contractor carries out any licensed activity.	
			(2) Any changes to the name and function of the specified agent, contractor or sub- contractor that will carry out the specified licensed activities must be notified to the MMO in writing prior to the agent, contractor or sub-contractor carrying out the licensed activity.	
			(3) Only those persons notified to the MMO in accordance with paragraph (2) are permitted to carry out the licensed activities.	
			Without Prejudice Comments	
			The following suggestions are for changes to improve clarity but note also change to 24 hours' notice before carrying out activ1ity, rather than a week after appointment: -	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>9. (1) The undertaker must provide the name, address and function of any agent, contractor or subcontractor that will carry out any licenced activity listed in this license on behalf of the undertaker to the MMO in writing no less than 24 hours before the agent, contractor or subcontractor carries out any licensed activity; and</p> <p>(2) Any changes to the name and function of the specified agent, contractor or subcontractor that will carry out the specified licenced activities must be notified to the MMO in writing prior to the agent, contractor or subcontractor carrying out the licensed activity.</p> <p>(3) Only those persons notified to the MMO in accordance with paragraph (1) or (2) are permitted to carry out the licensed activities.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>DML Section Notifications and inspections</p> <p>Current wording 10. The licence holder must ensure that a copy of this Schedule has been read and understood by any agents and contractors that will be carrying out any licensed activity on behalf of the licence holder, as notified to the MMO under condition 9.</p> <p>Without Prejudice Comments 10. (1) The undertaker must ensure that— (a) a copy of this licence (issued as part of the grant of the Order) and any subsequent amendments or revisions to it is provided to all agents and contractors notified to the MMO in accordance with condition 9;</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>DML Section Pollution prevention</p> <p>Current wording 13. The licence holder must— (a) not discharge waste concrete slurry or wash water from concrete, or cement into the marine environment, and where practicable, site concrete and cement mixing and washing areas at least 10 metres away from the marine environment and any surface water drain to minimise the risk of run off entering the marine environment;</p> <p>Without Prejudice Comments 13. The undertaker must- (a) ensure that no waste concrete slurry or wash water from concrete or cement works are discharged into the marine environment. Concrete and cement mixing and washing areas should be contained and at least 10 metres away from the marine environment and any</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>surface water drain to prevent run off entering the water through the freeing ports.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>DML Section Pollution prevention</p> <p>Current wording (f) ensure that any coatings and any treatments are suitable for use in the marine environment and are used in accordance with either guidelines approved by the Health and Safety Executive of the Environment Agency;</p> <p>Without Prejudice Comments (f) The undertaker must ensure that any coatings/treatments are suitable for use in the marine environment and are used in accordance with guidelines approved by Health and Safety Executive and the Environment Agency Pollution Prevention Control Guidelines;</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>DML Section Post-construction</p> <p>Current wording 15. The licence holder must remove all temporary structures, waste and debris associated with the licensed activities within 6 weeks following completion of the final construction activity.</p> <p>Without Prejudice Comments 15. The undertaker must remove all temporary structures, waste and debris associated with the licensed activities within 6 weeks following completion of the final construction activity.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>DML Section Maintenance</p> <p>Current wording 16. (1) Unless otherwise agreed by the MMO, the maintenance activities may not commence until a maintenance plan has been approved in writing by the MMO. (2) The maintenance plan must be submitted at least 6 weeks prior to the commencement of any maintenance activity, and must include details of the maintenance activities required including location, duration, timings, methodology and materials to be used. (3) Maintenance activities must be undertaken in accordance with the agreed plan.</p> <p>Without Prejudice Comments</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>The MMO requests this is updated to the following condition - these activities must be clearly stated within Part 1, Paragraph 3.</p> <p>16. (1) Unless otherwise agreed by the MMO, the maintenance activities may not commence until a maintenance plan has been approved in writing by the MMO.</p> <p>(2) The maintenance plan must be submitted at least 13 weeks prior to the commencement of any maintenance activity, and must include details of the maintenance activities required including location, duration, timings, methodology and materials to be used. (3) Maintenance activities must be undertaken in accordance with the agreed plan.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p>DML Section Decommissioning</p> <p>Current wording</p> <p>17. (1) Unless otherwise agreed by the MMO, the decommissioning activities may not commence until a decommissioning plan has been approved in writing by the MMO. (2) The decommissioning plan must be submitted at least 6 weeks prior to the commencement of any decommissioning activity, and must include details of the decommissioning activities required including location, duration, timings, methodology and materials to be used. (3) Decommissioning activities must be undertaken in accordance with the agreed plan.</p> <p>Without Prejudice Comments</p> <p>17. (1) Unless otherwise agreed by the MMO, the decommissioning activities may not commence until a decommissioning plan has been approved in writing by the MMO.</p> <p>(2) The decommissioning plan must be submitted at least 13 weeks prior to the commencement of any decommissioning activity, and must include details of the decommissioning activities required including location, duration, timings, methodology and materials to be used. (3) Decommissioning activities must be undertaken in accordance with the agreed plan.</p>	
RR-177	Marine Management Organisation	Draft DCO	<p><u>7. The Examining Authority's decision on removing the DML on similar DCO.</u></p> <p>7.1 On 04 April 2024, the Examining Authority's decision on the Gate Burton Energy Park DCO (EN010131) was to remove the DML. The DML for that project was very similar to the DML and project for the Tillbridge Solar Project DCO. The MMO request, that for the same reasons, the DML is removed from the Tillbridge Solar Project DCO.</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-177	Marine Management Organisation	Draft DCO	7.2 If the Applicant maintains that this provision is required, they should provide further justification for the inclusion of the DML, including identifying other DCOs where an exemption has applied and a DML has been included. Furthermore, the Applicant should justify each of the suggested conditions in the DML and the basis on which such conclusions are reached.	
RR-177	Marine Management Organisation	Draft DCO	7.3 The complete lack of assessment on any other activities would make the inclusion of a hugely problematic. Therefore, MMO request that the Examiner makes a recommendation to ask for more detailed information. Should the SoS conclude that a DML should be granted, this will effectively permit activities to be included which have not been assessed and this does not align with our usual process per the Marine and Coastal Access Act 2009 (the '2009 Act').	
RR-317	UK Health Security Agency	Effects on public health	Thank you for your consultation regarding the above development. The UK Health Security Agency (UKHSA) welcomes the opportunity to comment on your proposals at this stage of the project. Please note that we request views from the Office for Health Improvement and Disparities (OHID) and the response provided is sent on behalf of both UKHSA and OHID. We can confirm that: With respect to Registration of Interest documentation, we are reassured that earlier comments raised by us on 11th July 2023 have been addressed. In addition, UKHSA/OHID is satisfied with the methodology used to undertake the environmental assessment. We acknowledge that the Environmental Statement (ES) has not identified any issues which could significantly affect public health. Following our review of the submitted documentation we are satisfied that the proposed development should not result in any significant adverse impact on public health. On that basis, we have no additional comments to make at this stage and can confirm that we have chosen NOT to register an interest with the Planning Inspectorate on this occasion. Please do not hesitate to contact us if you have any questions or concerns.	The Applicant notes this comment.
RR-207	National Highways	Summary of matters related to the local highway network	National Highways has been appointed by the Secretary of State for Transport as a strategic highway company and is the highway authority, traffic authority and street authority for the Strategic Road Network (SRN). In relation to the Tillbridge Solar Project, our principal interest is in safeguarding the A1 and A46 trunk roads. Although the SRN is outside the Order Limits, it is understood that construction traffic could route via the A1 and A46. As such, we reserve the right to make written representations if an impact of construction traffic on the SRN is identified, or if changes to the application are made which result in impacts to the SRN.	The Applicant notes this comment.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-035	Cadent Gas	Summary of matters related to the gas distribution network	<p>Representation by Cadent Gas Limited (Cadent) to the Tillbridge Solar Project Development Consent Order (DCO)</p> <p>Cadent is a licensed gas transporter under the Gas Act 1986, with a statutory responsibility to operate and maintain the gas distribution networks in North London, Central, East Anglian and North West England. Cadent's primary duties are to operate, maintain and develop its networks in an economic, efficient, and coordinated way. Cadent wishes to make a relevant representation to the Tillbridge Solar Project DCO in order to protect its position in light of infrastructure which is within or in close proximity to the proposed DCO boundary.</p> <p>Cadent's rights to retain its apparatus in situ and rights of access to inspect, maintain, renew and repair such apparatus located within or in close proximity to the order limits including should be maintained at all times and access to inspect such apparatus must not be restricted. The documentation and plans submitted for the above proposed scheme have been reviewed in relation to impacts on Cadent's existing apparatus located within this area, and Cadent has identified that it will require adequate protective provisions to be included within the DCO to ensure that its apparatus and land interests are adequately protected and to include compliance with relevant safety standards.</p> <p>Cadent has high pressure gas pipelines and associated apparatus located within the order limits which are affected by works proposed, the extent to which is still being assessed and which may require diversions subject to the impact. Any proposed diversions have not yet reached detailed design stage and so the positioning, land rights and consents required for these gas diversions are not confirmed. At this stage, Cadent is not satisfied that the DCO includes all land and rights required to accommodate such diversions as design studies will need to influence these requirements. Cadent will not decommission its existing apparatus and/or commission new apparatus until it has sufficient land and rights in land (to its satisfaction) to do so, whether pursuant to the DCO or otherwise. This is a fundamental matter of health and safety.</p> <p>At this stage, Cadent is not satisfied that the tests under section 127 of the PA 2008 can be met. Cadent has experience of promoters securing insufficient rights in land within DCOs for necessary diversions of its apparatus or securing rights for the benefit of incorrect entities.</p> <p>It is important that sufficient rights are granted to Cadent to allow Cadent to maintain its gas distribution network in accordance with its</p>	<p>The Applicant acknowledges that Cadent has various interests in respect of rights and apparatus within the proposed Order limits. These interests are presently known to be within plots 2-05, 2-07, 3-05, 4-05, 4-07, 4-08, 4-10, 4-11, 4-12, 5-04, 5-05, 5-06, 5-07, 5-10, 5-11, 6-01, 6-02, 6-04, 6-06, 6-07, 6-09, 6-16, 6-18, 7-10, 7-11, 7-12 and 16-03 and can be identified on the Land and Crown Land Plans [AS-040] and in the Book of Reference [EN010142/APP/4.3(Rev02)]. The Applicant has sought to confirm these interests through requests for information which were issued on 3 April and 15 May 2023 and a response was received on 15 May 2023. Communications have since continued and a meeting took place on 28 February 2024 to discuss Cadent's assets and the protective provisions which will be required to ensure that Cadent's apparatus and land interests are adequately protected.</p> <p>The Applicant has also engaged with Cadent's solicitors to agree protective provisions which would be included in the draft DCO. These provisions are substantively agreed and negotiations are ongoing.</p> <p>The Applicant acknowledges Cadent's comments on the diversion of their apparatus. No diversions of Cadent's existing apparatus are proposed by the Scheme and easements from existing apparatus have been incorporated within the Works Plans [EN010142/APP/2.3(Rev02)]. As such, the Applicant believes that section 127 of the Planning Act 2008 has been met in this instance.</p> <p>The Applicant reiterates that it is committed to reaching agreement with Cadent on the protective provisions and will continue to work collaboratively to achieve this.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-021	Anglian Water	Protection of utility assets	<p>statutory obligations. As a responsible statutory undertaker, Cadent's primary concern is to meet its statutory obligations and ensure that any development does not impact in any adverse way upon those statutory obligations.</p> <p>Adequate protective provisions for the protection of Cadent's statutory undertaking have not yet been agreed but are in discussion between parties.</p> <p>Cadent wishes to reserve the right to make further representations as part of the examination process but will seek to engage with the promoter to reach a satisfactory agreement.</p> <p>Anglian Water (AW) is the appointed water and sewerage undertaker for the majority of the proposed Tillbridge Solar Project order limits. AW has engaged with Tillbridge Solar Limited (the Applicant) and there are on-going discussions regarding the interfaces between the project and our assets. This is confirmed within Table 1.4 'Status of negotiations with Statutory Undertakers' in document 'Volume 4 Schedule of Negotiations and Powers Sought' (Doc. Ref. EN01042/APP/4.4).</p> <p>Our intention is that agreement can be reached on Protective Provisions and other matters will be covered by the bilateral Statement of Common Ground which is also being progressed. Interfaces between the project and AW assets (underground and surface assets) AW owns and operates the water supply and water sewerage infrastructure within the project area, other than where these are provided by Severn Trent. In locations where the project intersects with AW assets, their protection and continuity of services to customers will be required. AW considers that the protection of existing network assets in and near the project site can be secured through Protective Provisions. However, Table 17.10 of Chapter 17 Environmental Statement Chapter 17: Other Environmental Topics is not clear if impacts of the development with water utilities have been fully investigated and standoff distances have been factored in accordingly.</p> <p>As a utility provider AW would want to ensure the location and nature of these assets is identified and protected. To reduce the need for diversions and the attendant carbon impacts of those works, ground investigations would enable the Applicant to design out these potential impacts and so also reduce the potential impact on services, if construction works cause a pipe burst or damage to all supporting infrastructure. Through previous consultation stages, AW has identified some notable assets within or in the vicinity of the order limits. For example, at the DCO site near Rampton and around the substation. There are pipes of 400mm or more in diameter which will require</p>	<p>The Applicant acknowledges the matters raised by Anglian Water in their Relevant Representation and concurs that it will be possible to agree protective provisions and a Statement of Common Ground (SoCG) prior to the conclusion of the DCO examination.</p> <p>Impacts with regards to water supply and demand have been considered within Section 10.4 of Chapter 10: Water Environment of the Environmental Statement [APP-041]. Easements from existing utilities have been considered within design and will be incorporated within the protective provisions once these are agreed with Anglian Water.</p> <p>The Applicant and Anglian Water have been in correspondence since August 2022 and most recently met on 30 July 2024 to discuss the Scheme, the latest position on the protective provisions and the requirement for a SoCG between the two parties.</p> <p>Protective provisions are substantively agreed between the parties, and the Applicant is confident these can be agreed and included within the draft DCO during the course of the examination.</p> <p>The Applicant has prepared an SoCG with Anglian Water [EN010142/APP/9.15], including an apparatus plan to supplement the protective provisions and SoCG for submission at Deadline 1. The following items have been provisionally included in the SoCG and reflect the points discussed in the 30 July 2024 meeting and Anglian Water's Relevant Representation:</p> <ul style="list-style-type: none"> • Protective Provisions; • draft DCO (Schedule 2); • Surface Water Drainage & Rainwater Harvesting; • Prospective Anglian Water Infrastructure; • Requirement for Private Water Supplies; • Access to Anglian Water Assets; and

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>bespoke stand-off distances based on ground investigations undertaken by the project. Maps of AW's underground assets are available to view at the following address: http://www.digdat.co.uk A completed land interest questionnaire has been provided to the Applicant by AW's Estates Team.</p>	<ul style="list-style-type: none"> • Diversions of Anglian Water Assets. <p>The Applicant is committed to reaching agreement with Anglian Water and will continue to work collaboratively to achieve this.</p>
			<p>This confirms details of 3 above ground assets and formal easements which may be affected - these are LL256344 and LL256436 off Fillingham Lane, Willingham by Stowe and LL256349 off Middle Street, Harpswell. AW's template Protective Provisions were supplied during the Pre-Application stage but will need to be agreed and included in the draft DCO (Part 9) to ensure that such works are in accordance with these provisions.</p>	
			<p>Some discussions have taken place between AW and the Applicant on these aspects but will need to confirm, for example, any sensitive plant, open cut locations, access works, likely diversions any above ground plant and shared access locations. The draft Protective Provisions listed under Schedule 15, Part 13 of the draft DCO will need to be amended accordingly as these matters are agreed. We would also request confirmation that works on public highways that lead to Anglian Water's assets will be undertaken to ensure 24 hours/ 7-day access is maintained.</p>	
RR-021	Anglian Water	Water supply and demand requirements	<p>Water Supply and Water Recycling/ Sewerage requirements of the project Anglian Water has previously submitted representations regarding the proposed development being within an area of serious water stress designated by the Environment Agency.</p> <p>The Scoping Opinion issued by PINS states the Environmental Statement should provide details relating to the water supply and demand requirements during the construction and operational phases. Some detail on the need for water usage for the project is set out under Section 10.4.25 – 10.4.34 of Chapter 10: Water Environment.</p> <p>At the construction phase, this confirms that no permanent connection to the mains water will be required and instead water supply will be obtained from clean water tanks provide to supply the various temporary welfare facilities. Other anticipated need for water during construction is for concrete curing only, as concrete batching would undertaken at a local existing facility. Other water needs would include internal road construction but may not be required where rainfall can be utilised. It is not clear about water requirements for dust suppression.</p>	<p>Water supply and demand have been considered within Section 10.4 of Chapter 10: Water Environment of the Environmental Statement [APP-041]. This includes estimates for water demand during construction and operation of the Scheme on the basis of current design. No connection to mains water supply is proposed during construction. During operation, it is proposed that the water supply for the Solar Farm Control Centre will come from the mains water supply. There are anticipated to be up to 12 permanent staff during operation on site which would result in an estimated usage of 1,080 litres per day (or 1.08m³ /d) based on the industry standard of 90 litres per person. This is less than the Anglian Water development proposals for dwellings of 110 litres per person per day.</p> <p>The operation of the Scheme would also require the storage of water in the event of a fire. The BESS areas will be designed to integrate pressure fed fire hydrants and/or static water tanks for firefighting. Water provision will be designated for the cooling of adjacent BESS equipment. This will meet current UK National Fire Chiefs Council (NFCC) guidelines (Ref 1-11) which stipulate tanks and / or hydrants should be capable of delivering no less than 1,900 litres per minute for at least 2 hours. The firefighting water requirement will be fully assessed at the detailed design stage based upon BESS fire and explosion test data by an independent Fire Protection Engineer and water storage volumes will be agreed with Lincolnshire FRS</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>During the operation stage, Table 10.5 'Main matters relevant to water environment impacts raised through statutory consultation' states that water demand requirements are to be sourced from local licenced suppliers. The Solar Farm Control Centre water supply is to come from a mains water supply connection. For Panel PV cleaning water will be provided from off-site suppliers rather than main connection. There are anticipated to be up to 12 permanent staff during operation on site where some water would be required. The same applied to storage of water in tanks in the event of a fire. In summary, Anglian Water has a statutory duty to supply water for domestic purposes.</p> <p>This means we are legally obliged to supply water to all household properties as well as any domestic requirements (e.g., drinking water, hand-basins, toilets and showers) of non-household properties. In many cases, domestic demand will be the only requirement for non-household properties (e.g., schools, hospitals, offices, shops and hairdressers). Non-domestic demand refers to water use for industrial processes, (e.g., agri-food production or car washes), and there is no legal requirement for us to supply for this type of water usage where it might put at risk our ability to supply water for domestic purposes.</p> <p>Although Anglian Water does not have a statutory obligation to supply for non-domestic purposes in these circumstances, we factor this into our Water Resources Management Plan and we do every-thing we can to support businesses in the region, with the help of the water retail market. However, the situation is now changing, due to water supply being squeezed by abstraction reduction, climate change and a fast-growing population.</p> <p>Therefore, where new and unplanned non-domestic requests are received, which exceed 20,000 litres per day (0.020 MI/d) (this may be less dependent on the availability of water in that area) or where there is a cumulative impact from a significant number of smaller requests, there might be the need to decline to protect existing supplies and the environment.</p> <p>Anglian Water advises through its Non-Domestic Water Requests Policy - July 2024 that new non-household water supply requests (construction and operational phases) may be declined as these could compromise our regulatory priority of supplying existing and planned domestic growth. The flows needed to fill water storage tanks for example (if the Applicant decides not to use rainwater harvesting on site to meet this non potable demand) will need to be assessed by Anglian Water to advise whether a supply is feasible when assessed in terms of the</p>	<p>during detailed design. Once present on site, the stored water is unlikely to be required, and therefore would not cause an ongoing demand for the area of Water Stress. If water for the water storage tanks is to be obtained from the mains supply, a water supply request would be made to Anglian Water, accompanied by a Water Resource Assessment. This has been clarified within Table 3-5 of the Framework OEMP [EN010142/APP/7.9(Rev01)] and the need for the mains supply connection will be confirmed at detailed design stage. However, the Scheme is not reliant on the mains supply for the water storage tanks, as commercial suppliers can be used to fill the storage tanks instead.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>potential to jeopardise domestic supply or at a significant financial or environmental cost.</p> <p>To assess these requests, we require a Water Resource Assessment to be submitted as part of our planning process setting out a daily demand for each stage of the project and whether this is for domestic or non-domestic uses. Water use during construction means that the promoter will need to confirm that concrete production, for example, would be offsite and so not require an on-site supply. Where feasible, we will work to explore innovative solutions to meet these requests.</p> <p>Further advice on water capacity and options can be obtained by submitting a pre-development enquiry to Anglian Water's Pre-Development Team at: planningliaison@anglianwater.co.uk Further information is available on the InFlow webpages: InFlow Development Services (anglianwater.co.uk)</p>	
RR-021	Anglian Water	Water capacity, including exploration of rainwater harvesting	<p>Anglian Water is pleased to note that further investigation on the potential for rainwater harvesting for non-potable water supply for operational compounds will take place – see reference to the Outline Drainage Strategy within Appendix 10-4 under section 3.1.5.</p> <p>The project should still investigate rainwater collection for the non-potable supply for the fire tanks as well as non-potable uses for the construction stage. Further assessment should take place for collection from day 1 (or asap) during construction to fill tanks & design of collection to maximise top up opportunities as part of the SuDS and green/ blue infrastructure. This would avoid the use of scarce water resources and the embodied (capital) carbon that such mains water supply may entail.</p> <p>We welcome that the proposed foul water drainage strategy confirms that due to the low flows and lack of public sewers in the vicinity of the building, the foul water flows will be serviced by a cesspit. The draft DCO should, therefore, exclude a provision which seeks the right to connect to the public sewer.</p> <p>Flooding and surface water The drainage strategy confirms it does not require the use of the public sewer network to manage additional surface water flows. As a result, there should be no right to connect powers included within the draft DCO.</p> <p>Framework Construction Environmental Management Plan (CEMP) Framework Traffic Management Plan (TMP) Framework Decommissioning Environmental Management Plan (DEMP)</p>	<p>Regarding the use of rainwater collection for the non-potable supply for the fire tanks, the use of rainwater collection for fire supply tanks the BESS areas will be designed to integrate pressure fed fire hydrants and/or static water tanks for firefighting, with water supply being sourced externally and transported to site. Water provision will be designated for the cooling of adjacent BESS equipment. This will meet current UK National Fire Chiefs Council (NFCC) guidelines (Ref 1-11) which stipulate tanks and / or hydrants should be capable of delivering no less than 1,900 litres per minute for at least 2 hours. The firefighting water requirement will be fully assessed at the detailed design stage based upon BESS fire & and explosion test data by an independent Fire Protection Engineer and water storage volumes will be agreed with Lincolnshire FRS during detailed design.</p> <p>In terms of the right to connect into the public sewer, the Applicant confirms that no such connection is required to implement the Scheme. The draft DCO [EN010142/APP/3.1(Rev03)] being submitted at Deadline 1 has therefore been amended to remove the relevant provision seeking this power.</p> <p>No impact on access to Anglian Water assets, such as Water Recycling Centres (WRCs), water storage sites and sewer pumping stations, is anticipated as a result of the Scheme. The Applicant is continuing discussions on protective provisions with Anglian Water and will seek to agree these during the course of the examination.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-097	Forestry Commission	Fragmentation of small fragmented woodlands within the draft Order limits	<p>We welcome the submission of these framework documents. Whilst Protective Provisions should address those interactions with our assets, Anglian Water would seek to ensure that 24 hours /7-day access to our assets such as Water Recycling Centres (WRCs), water storage sites and sewer pumping stations, is not compromised, and therefore would welcome further discussion with the Applicant regarding such matters and their inclusion in the final CTMP. These documents should include steps to remove the risk of damage to Anglian Water assets from plant and machinery (compaction and vibration during the construction phase) including any haul and access roads and crossings. Further advice on minimising and then relocating (where feasible) Anglian Water existing assets can be obtained from: connections@anglianwater.co.uk.</p> <p>Thank you for consulting the Forestry Commission on this proposal. As the Governments forestry experts, we endeavour to provide as much information as possible to enable the project to reduce any impact on irreplaceable habitat such as Ancient Semi natural woodland, as well as other woodland. We are satisfied there is no ancient woodland within the project area, however there are several small fragmented woodlands within the draft order limits. Including areas of lowland mixed deciduous woodlands, both within the order limits and adjacent to it. Lowland Mixed Deciduous woodlands are on the National Forest Inventory and the Priority Habitat Inventory (England). They were recognized under the UK Biodiversity Action Plan as being the most threatened, requiring conservation action.</p> <p>The UK Biodiversity Action Plan has now been superseded but this priority status remains under the Natural Environment & Rural Communities Act 2006. (NERC) Sect 40 "Duty to conserve and enhance biodiversity" and Sect 41 – "List of habitats and species of principle importance in England".</p> <p>Fragmentation is one of the greatest threats to lowland mixed deciduous woodland. Woodlands can suffer loss or deterioration from nearby development through damage to soils, roots and vegetation and changes to drainage and air pollution from an increase in traffic and dust, particularly during the construction phase of a development. There is a danger that some of the fragmented woodlands within the site may become further isolated in the solar panel areas without suitable habitat corridors being created. Paragraph 5.11.27 of EN-1, The National Policy Statement for Energy States: "Existing trees and woodlands should be retained wherever possible. In the EIP, the Government committed to increase the tree canopy and woodland cover to 16.5% of total land area of England by 2050.</p> <p>The applicant should assess the impacts on, and loss of, all trees and woodlands within the project boundary and develop mitigation measures to minimise adverse impacts and any risk of net</p>	<p>The Applicant has recorded the tree related priority habitats which are detailed in paragraph 2.9.11 of the Arboricultural Impact Assessment [APP-107] and are shown on the Tree Constraints Plan and Tree Protection Plans in Annex A and C [APP-107 to APP-109].</p> <p>Woodland loss (part removal of a woodland feature) is reported for only two woodland features, rather than three woodlands as stated by the Forestry Commission below. Woodlands W739 and W744 are proposed to be removed in part to facilitate access routes as stated in paragraph 4.2.1 of the Arboricultural Impact Assessment [APP-107] and these routes utilise existing access routes where feasible to minimise tree loss. More widely the design of the Scheme and the arrangement of the Order limits have clearly and demonstrably taken existing trees and woodlands into account (e.g. the Order limits avoid most woodlands).</p> <p>Buffer zones have been applied in the form of Root Protection Areas (in accordance with BS5837:2012 Trees in relation to design, demolition and construction – Recommendations (Ref 1-12)) to ensure trees, roots and soil structure are protected.</p> <p>In relation to canopy cover, the Arboricultural Impact Assessment [APP-107] states that only 1% of the surveyed tree population is to be removed to facilitate the Scheme and this is likely to be further reduced as part of the detailed design. The impacts on trees and woodlands are assessed in the Arboricultural Impact Assessment [APP-107] and mitigation is proposed. This will be further developed as part an Arboricultural Method Statement which is secured via the Framework CEMP [EN010142/APP/7.8 (Rev01)].</p> <p>Access for the maintenance of the retained woodland that is managed under the Farm Woodland Premium Scheme will be maintained for the</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>deforestation as a result of the scheme. Mitigation may include, but is not limited to, the use of buffers to enhance resilience, improvements to connectivity, and improved woodland management. Where woodland loss is unavoidable, compensation schemes will be required, and the long-term management and maintenance of newly planted trees should be secured.”</p>	<p>relevant landowners. Tree loss will be mitigated with new tree planting as detailed and secured by the Framework LEMP [EN010142/APP/7.17(Rev02)].</p>
RR-097	Forestry Commission	Impact on the Farm Woodland Premium Scheme	<p>There are also several areas of woodland within the draft order limits that were either established or managed with the support of public money in the form of the Farm Woodland Premium Scheme. These grants are still in obligation, the land owner is expected to meet all the Terms and Conditions of the agreement contract. Failure to do so is likely to require the Forestry Commission to seek to recover all of the relevant grant that has been paid, to ensure that public money is not wasted.</p> <p>Woodland locations: SK 9089 8984 – 4.54ha SK 9189 8932 -1.28ha SK 9237 8940 – 0.66ha SK 9293 8886 – 0.4ha SK 9316 8891 – 0.28ha There is also one area of grant funded woodland that is completely surrounded by the draft order limits.</p> <p>Access for future management of the woodland will need to be considered. While the Environmental Statement states that areas of woodland will be retained, three woodlands are identified for partial removal in the Arboricultural Report. One of which (W744) is the grant funded woodland at SK 9316 8891.</p>	
RR-097	Forestry Commission	Long term management and maintenance of larger woodland blocks hedgerows to ensure maximum gains to increase habitat connectivity	<p>A scheme that bisects any woodland will not only result in significant loss of woodland cover but will also reduce the ecological value and natural heritage impacts due to habitat fragmentation, and have a huge negative impact on the ability of the biodiversity (flora and fauna) to respond to the impacts of climate change We note the application also states that RPA's will be appropriately buffered and protected during construction, especially with any ancient and veteran trees identified on site. We also note plans for native tree planting across the site, wildlife corridors and areas of woodland within the biodiversity zones. Although these are being used primarily for screening purposes.</p> <p>As stated in the Environmental Improvement Plan 2023 it is a strategic government objective to increase the net area of tree canopy and woodland cover to 16.5% of total land area in England by 2050. It goes on to state that that increasing tree cover is key to achieving the Net Zero Strategy and species abundance targets. Hedgerows, individual trees and woodlands within a development site should also be considered in terms of their overall connectivity between woodlands affected by the development. Perhaps by linking up some of the small</p>	<p>The development of the Scheme has been informed by extensive tree surveys. Tree and woodland loss and impacts have been avoided and reduced where feasible. Existing access routes have been used where feasible and these measures reduce any habitat fragmentation. The two small areas where part of a woodland group (W739 and W744) is proposed for removal utilises existing access routes where possible to reduce impacts and the extent of loss.</p> <p>Tree loss will be mitigated with new tree planting as detailed and secured by the Framework LEMP [EN010142/APP/7.17(Rev02)] and illustrated on the Indicative Landscape Masterplan [AS-028]. The masterplan demonstrates the comprehensive landscape and ecological design, which includes the connection of existing isolated woodland blocks through new tree belts and hedgerow trees, alongside enhancement of existing hedgerows. This is intended to enhance green infrastructure and improve habitat connectivity within and around the Principal Site.</p> <p>The Applicant notes the comments with respect to significant planting schemes. Framework LEMP [EN010142/APP/7.17(Rev02)] notes that</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>fragmented woodlands, to create some larger woodland blocks and using hedgerow/hedgerow trees to ensure maximum gains to increase habitat connectivity and benefit biodiversity across the whole site. Especially in the areas adjacent to the lowland mixed deciduous woodland areas and other woodland blocks within the site, not solely in specific areas or just to be used as screening. However, there are a number of issues that need to be considered when proposing significant planting schemes:</p> <ul style="list-style-type: none"> • Biosecurity of all planting stock needs to be considered. • Woodlands need to be climate, pest and disease resilient. • Maximise the ecosystem services benefits of all new woodland wherever possible (flood reduction) • Planting contributes to a 'resilient treescape' by maximising connectivity across the landscape. <p>Plans are in place to ensure long term management and maintenance of woodland. I hope these comments have been useful to you, if you require any further information, please do not hesitate to contact me.</p>	<p>although stock of UK provenance will be preferred, there will be a need to consider climate change adaptation and genetic variation as resilience to biosecurity threats. The Framework LEMP [EN010142/APP/7.17(Rev02)] also includes a range of species and sizes that are intended to maximise ecosystem services, as well as enhancing habitats and biodiversity. The Framework LEMP [EN010142/APP/7.17(Rev02)] also sets out the proposed monitoring and maintenance proposals.</p> <p>Requirement 7 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] will ensure that the detailed LEMP, which will include further details with respect to these matters, is prepared in substantial accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] and approved by the relevant planning authority prior to that phase of the Scheme.</p>
RR-316	Trent Valley Internal Drainage Board	Summary of matters related to the Trent Valley Internal Drainage Board's controlled areas	<p>With regard to the above project, I would advise that the extent of the overall development covers areas under the control of Trent Valley Internal Drainage Board. There are numerous watercourses that are likely to be impacted by the development, either by the position of the proposed arrays, cable route or potential increase in flows. I feel that it is important to raise some specific issues that will need to be considered further and in detail as a part of the DCO process. All Board watercourses are subject to Byelaws, which are intended to protect the watercourses and the Board's ability to maintain them. With this in mind I would advise the following.</p>	<p>The Applicant notes this comment. Responses to specific issues raised are provided below.</p>
RR-316	Trent Valley Internal Drainage Board	Flow of volume of watercourses	<p>Byelaw Number 3 states that: No person shall as a result of development (within the meaning of section 55 of the Town and Country Planning Act 1990 as amended ("the 1990 Act")) (whether or not such development is authorised by the 1990 Act or any regulation or order whatsoever or none of them) for any purpose by means of any channel, siphon, pipeline or sluice or by any other means whatsoever introduce any water into any watercourse in the District so as to directly or indirectly increase the flow or volume of water in any watercourse in the District (without the previous consent of the Board)."</p> <p>Consent will only be granted for the increase in flow to a watercourse where the Board is happy that in doing so no demonstrable harm will be caused. It may be the case that appropriate mitigations are required to be put in place to either attenuate flow or to enhance the existing watercourse to ensure no detriment. If this is not possible alternative outfall locations may need to be considered.</p>	<p>The Trent Valley Internal Drainage Board area includes sections of the Cable Route Corridor. No permanent above ground infrastructure is proposed within the Trent Valley Internal Drainage Board area.</p> <p>Any temporary Sustainable Drainage Systems with discharges to Trent Valley Internal Drainage Board managed watercourses during construction would be managed by the Contractor, as set out within the Framework CEMP [EN010142/APP/7.8 (Rev01)], which in turn is secured by a Requirement of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>The draft DCO [EN010142/APP/3.1(Rev03)] seeks to disapply this Byelaw, and manage drainage matters via the protective provisions to be agreed between Trent Valley IDB and the Applicant. The Applicant awaits the Trent Valley IDBs comments on the protective provisions included within the draft DCO.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-316	Trent Valley Internal Drainage Board	Development in close proximity to embankments	<p>Byelaw Number 10 states that: No person without the previous consent of the Board shall erect any building or structure, whether temporary or permanent, or plant any tree, shrub, willow or other similar growth within nine metres of the landward toe of the bank where there is an embankment or wall or within nine metres of the top of the batter where there is no embankment or wall, or where the watercourse is enclosed within nine metres of the enclosing structure. This will relate primarily to the location of the arrays, compounds and transformer stations.</p>	<p>The Framework CEMP [EN010142/APP/7.8 (Rev01)] proposes a 10m buffer to all watercourses. Consent for any temporary surface water drainage outfalls to the watercourses under the ownership of TVIDB would be requested in advance of the works, as set out within the Framework CEMP [EN010142/APP/7.8 (Rev01)]. Compliance with the Framework CEMP [EN010142/APP/7.8 (Rev01)] is secured by the Requirements of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>The LVIA does not make reference to any proposed planting within any part of the Cable Route Corridor, including within the Trent Valley IDB area. Any planting within the Trent Valley IDB area will be subject to detailed design post-DCO consent and will align with the intention within this Byelaw.</p> <p>However, as noted above, draft DCO [EN010142/APP/3.1(Rev03)] seeks to disapply this Byelaw, and manage drainage matters via the protective provisions to be agreed between Trent Valley IDB and the Applicant. The draft protective provisions set out within Schedule 15, Part 3 of the draft DCO [EN010142/APP/3.1(Rev03)] require the undertaker to submit plans and any further details requested of a proposed specified work (being works within 9 metres of the banks of a watercourse or another drainage or flood defence asset) to TVIDB for approval before commencing construction</p>
RR-316	Trent Valley Internal Drainage Board	Development near Trent Valley Internal Drainage Board's assets	<p>Byelaw number 17 states that: No person shall without the previous consent of the Board –</p> <ul style="list-style-type: none"> • (a) place or affix or cause or permit to be placed or affixed any gas or water main or any pipe or appliance whatsoever or any electrical main or cable or wire in, under or over any watercourse or in, over or through any bank of any watercourse; • (b) cut, pare, damage or remove or cause or permit to be cut, pared, damaged or removed any turf forming part of any bank of any watercourse, or dig for or remove or cause or permit to be dug for or removed any stone, gravel, clay, earth, timber or other material whatsoever forming part of any bank of any watercourse or do or cause or permit to be done anything in, to or upon such bank or any land adjoining such bank of such a nature as to cause damage to or endanger the stability of the bank; • (c) make or cut or cause or permit to be made or cut any excavation or any tunnel or any drain, culvert or other passage for water in, into or out of any watercourse or in or through any bank of any watercourse; • (d) erect or construct or cause or permit to be erected or constructed any fence, post, pylon, wall, wharf, jetty, pier, quay, bridge, loading stage, piling, groyne, revetment or any other 	<p>There are no permanent above ground works proposed within the Trent Valley Internal Drainage Board administrative area. Consent for any discharges or temporary crossings during construction would be applied for prior to the works, as set out within the Framework CEMP [EN010142/APP/7.8 (Rev01)]. Compliance with the Framework CEMP [EN010142/APP/7.8 (Rev01)] is secured by the Requirements of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>As noted above, the draft DCO [EN010142/APP/3.1(Rev03)] seeks to disapply this Byelaw, and manage drainage matters via the protective provisions to be agreed between Trent Valley IDB and the Applicant.</p> <p>However, Byelaw 17 has been considered in the preliminary designs to date. The preliminary proposals presented in Figure 3-12 of the Environmental Statement [EN010142/APP/6.3(REV01)] reflect a trenchless crossing under all Internal Drainage Board watercourses at a minimum depth of 3.0m below the watercourse bed level. This is with the exception of the River Till and the River Trent where cables will be installed at a minimum of 5m below the lowest surveyed point of the riverbed. The minimum depth under watercourse crossings is secured through compliance with the Outline Design Principles Statement [AS-058]. Consultation with all stakeholders including Trent Valley Internal</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>building or structure whatsoever in, over or across any watercourse or in or on any bank thereof;</p> <ul style="list-style-type: none"> • (e) place or fix or cause or permit to be placed or fixed any engine or mechanical contrivance whatsoever in, under or over any watercourse or in, over or on any bank of any watercourse in such a manner or for such length of time as to cause damage to the watercourse or banks thereof or obstruct the flow of water in, into or out of such watercourse. <p>Provided that this Byelaw shall not apply to any temporary work executed in an emergency but a person executing any work so excepted shall, as soon as practicable, inform the Board in writing of the execution and of the circumstances in which it was executed and comply with any reasonable directions the Board may give with regard thereto.</p> <p>The Board will require all watercourses to be crossed by means of HDD at a depth no less than 2 metres PLUS the cable safety distance below the hard bed level of all watercourses (to ODN if EA or IDB maintained). This will apply to the primary cable route and any interconnecting cables between array sites. The purpose of this requirement is to allow the IDB to maintain and have the flexibility to improve watercourses in the future due to climate change (works will include deepening & widening of watercourses). It is anticipated that the above requirements would be covered by SOCGs, MOU, and via Protective Provisions within the DCO. This matter should be discussed further and in more detail as the proposed cable route is refined. Any culverting or other works within the bed of any riparian watercourse within the Board's district be they temporary or permanent will also require consent. The Board would not look to be disapplying section 23 of the Land Drainage Act (1991). It should be noted that the Board's consent is required irrespective of any permission gained under the Town and Country Planning Act 1990. The Board's consent will only be granted where proposals are not detrimental to the flow or stability of the watercourse/ culvert or the Board's machinery access to the watercourse/ culvert which is required for annual maintenance, periodic improvement and emergency works. I hope that the above is of assistance and I look forward to further ongoing detailed discussions with regard to the proposal.</p>	<p>Drainage Board will continue as the designs develop subject to the Scheme obtaining Development Consent.</p>
RR-111	GTC Pipelines Ltd (GTC Pipelines Ltd)	No objection to the Scheme	<p>I can confirm GTC has no existing assets or infrastructure in the order limits of the solar farm project shown in the letter and uploaded to the online Inspectorate portal. Therefore, GTC has no objections to any of the works.</p>	<p>The Applicant notes this comment.</p>
RR-080	CMS Cameron McKenna Nabarro Olswang	Summary of Interested Party	<p>This relevant representation is submitted on behalf of EDF Energy (Thermal Generation) Limited ("EDF"). The Book of Reference ("BoR", Document APP-019) identifies plots 1-02, 1-03, 21-23, 23-02, 23-03,</p>	<p>The Applicant notes this comment.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
	LLP on behalf of EDF Energy (Thermal Generation) Limited		23-04, 23-05, 23-06, 23-07, 24-01 and 24-02 (the "EDF Plots") as either land owned by EDF or in which EDF has an interest over which compulsory acquisition powers to permanently acquire land and acquire new rights are sought. EDF is, therefore, an Affected Person for the purposes of section 59(4) of the Planning Act 2008 and the Infrastructure Planning (Interested Parties) Regulations 2010, as its land is subject to proposed compulsory acquisition rights by the applicant, and is automatically an Interested Party by virtue of being an Affected Person. However, to assist the Examining Authority in carrying out an initial assessment of the principal issues, EDF make this relevant representation. EDF owns the Cottam Power Station, a coal-fired power station in close proximity to the proposed Order Limits, through which part of the proposed cable corridor of the Project will run. The station ceased generating in 2019, and EDF has responsibility for the safe decommissioning and demolition of the power station assets. Cottam Power Station houses critical live infrastructure for both National Grid and the adjacent Cottam Development Centre ("CDC"), which is owned and operated by Uniper.	
RR-080		Protection of Interested Party's infrastructure assets	To safeguard EDF's interests, and the safety and integrity of the ongoing decommissioning and continuing operations, EDF objects to the inclusion of the EDF Plots in the DCO and the compulsory powers in respect of such plots. EDF will require appropriate protection to ensure that the Project does not jeopardise continuing operations (including those of CDC) or site decommissioning and demolition. EDF's rights of access to inspect, maintain, renew and repair such infrastructure must also be maintained at all times and access to inspect and maintain such apparatus must not be restricted. Critical third-party infrastructure is located on the EDF site (a make-up and purge line which supplies the CDC, a 400kV underground electricity export cable and gas pipeline both owned by Uniper, underground and overground cables owned by National Grid, cables owned by Western Power Distribution and potable water supplies). Any infrastructure or operations associated with the Project must protect this third-party infrastructure and be undertaken in full compliance with the terms of existing legal agreements and obligations.	<p>The Applicant acknowledges the concerns raised by EDF regarding the inclusion of their land in the Order limits. The Applicant also understands the importance of maintaining EDF's rights of access to inspect, maintain, renew, and repair infrastructure, as well as the requirement of protecting critical third-party infrastructure located on the EDF site.</p> <p>The Applicant is presently working with EDF to agree heads of terms for an option to take an easement over the land to the north of Torksey Ferry Road as well as agreeing protective provisions to be included in the draft DCO. The heads of terms are substantively agreed and include provisions to protect EDF's existing infrastructure as well as any third-party infrastructure (term 13). The heads of terms were returned to EDF's agents on 2 August 2024 and a follow up email was issued on 16 September 2024. A response is awaited.</p> <p>It is anticipated that protective provisions will be agreed during the course of the Examination and the draft DCO will be updated accordingly. It is expected that with such provisions in place, there will be appropriate protection for EDF and its undertaking and that the concerns raised can be addressed.</p>
RR-080		Protective provisions in Draft DCO	The wider Cottam Site has been designated in the draft Bassetlaw Local Plan as a "Priority Regeneration Area," and EDF wish to ensure that the regeneration of the site is facilitated in line with the Council's requirements and ambitions. It is therefore imperative that the proposed cable route does not sterilise development land or detract from future development plans. EDF will require protective provisions to be included within the draft DCO for the Project to ensure that its	<p>The Applicant acknowledges that the Cottam Power Station site is safeguarded land for future development as a Priority Regeneration Area within the emerging Bassetlaw Local Plan, as set out in the Planning Statement [AS-029].</p> <p>As set out in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] the inclusion of the former Cottam</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>interests are adequately protected and to ensure compliance with relevant safety, decommissioning and third-party obligations. Additionally, EDF recommend that a pre-commencement requirement be imposed under the DCO, if granted, related to the approval of the final cable routing and that EDF be a named consultee for subsequent discharge of such a requirement. EDF is liaising with the Promoter in relation to the proposed route and such protective provisions, along with any supplementary agreements which may be required. EDF reserves the right to make further representations as part of the Examination process but in the meantime will continue to liaise with the Promoter with a view to reaching a satisfactory agreement.</p>	<p>Power Station site in the Scheme's Order limits was ruled out during the site selection process in order to avoid conflicting with this policy and to protect the site for future growth. The Scheme has avoided the former Cottam Power Station site in its site selection process, and therefore it would not jeopardise the comprehensive remediation, reclamation and redevelopment of the whole site beyond the plan period, and would not preclude this area being developed in the future.</p> <p>The Applicant acknowledges the need for protective provisions for the benefit of EDF to be included in the draft DCO and is currently in discussions with EDF's lawyers regarding the content of those provisions. The Applicant's legal team have reviewed and provided comments on EDF's standard protective provisions and is awaiting EDF's response. The bulk of the provisions are agreed, with only a handful of provisions needing further discussion and resolution.</p>
RR-211	Addleshaw Goddard LLP on behalf of Network Rail Infrastructure Limited	Interaction of the Scheme with Network Rail assets	<p>This is the section 56 representation of Network Rail Infrastructure Limited (Network Rail) provided in respect of Tillbridge Solar Limited's (Applicant) application for a development consent order (Order) which seeks powers to enable the construction and operation of a solar farm capable of generating over 50MW Alternating Current (AC) of electricity with co-located battery energy storage system ("BESS"), at Tillbridge (Scheme).</p> <p>Network Rail is a statutory undertaker and owns, operates and maintains the majority of the rail infrastructure of Great Britain. The Book of Reference (BoR) identifies 7 plots (Plots) of land over which Network Rail have rights or land is owned or occupied by Network Rail, in respect of which compulsory acquisition powers are sought (Compulsory Powers). These include land forming part of (or adjacent to) the operational railway (the Sheffield to Lincoln line and Torksey branch line). These Plots all relate to the cable route corridor.</p> <p>The Scheme requires that electrical cabling cross the Sheffield to Lincoln line and the Torksey branch line in order to connect the solar station to the grid at Cottam National Grid Substation. The Applicant is proposing a trenchless crossing solution for the crossing of both lines, with a trench depth of 10 metres below Network Rail infrastructure. The crossings are identified on figure 3.11 as T16 (Sheffield to Lincoln line) and T8 (Torksey branch line).</p> <p>Network Rail considers that there is no compelling case in the public interest for the acquisition of the Compulsory Powers and Network Rail considers that the Secretary of State, in applying section 127 of the Planning Act 2008, cannot conclude that new rights and restrictions</p>	<p>The Applicant notes the observations made by Network Rail on the likely implications of the construction phase of the Scheme in terms of Network Rail's interests. To clarify, the Framework Construction Traffic Management Plan [EN010142/APP/7.11(Rev02)] only includes construction phase traffic information. Operational and decommissioning phase effects are addressed within Chapter 16: Transport and Access of the ES [APP-047]. The Applicant notes that Network Rail is currently reviewing the Framework Construction Traffic Management Plan and will provide comments in due course. The Applicant will proactively engage with Network Rail in response to its comments.</p> <p>Network Rail sets out the agreements required with the Applicant, and its position on protective provisions in the draft DCO, for Network Rail to be in a position to withdraw its objection. Discussions are ongoing between Network Rail's and the Applicant's legal teams with regards these matters. The Applicant concurs with Network Rail's view that it is hopeful that an agreement can be reached, and will continue to engage proactively towards reaching a mutually agreeable solution.</p> <p>In response to Network Rail's request, the Applicant has updated the draft DCO [EN010142/APP/3.1(Rev03)] to be submitted at Deadline 1 to include Network Rail's standard set of protective provisions, on the basis that the amendments sought by the Applicant will be included as part of the Framework Agreement that is being negotiated between the parties. The Framework Agreement is currently with Network Rail's solicitors following the Applicant's initial review and comment.</p> <p>Heads of terms for easement in respect of both operational and non operational railway crossings were provided by Network Rail on 1 October</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>over the railway land can be created without serious detriment to Network Rail's undertaking; no other land is available to Network Rail which means that the detriment can be made good by them. Network Rail also objects to all other compulsory powers in the Order to the extent that they affect, and may be exercised in relation to, Network Rail's property and interests. Network Rail is also concerned that as per Schedule 3 of the draft Order, the Applicant is seeking to disapply certain railway legislation, being:</p> <ul style="list-style-type: none"> • the Great Grimsby and Sheffield Junction Railway Act 1845, • the Great Northern Railway Act 1846, • the Sheffield and Lincolnshire Junction Railway Act 1846, • the Manchester, Sheffield and Lincolnshire Railways and Manchester and Lincolnshire Union Railway and Chesterfiled and Gainsborough Canal Amalgamation Act 1847. • the West Riding and Grimby Railway (Extension) Act 1965, and • the Great Central Railway Act 1907 <p>This legislation provides Network Rail with a series of rights and responsibilities which allow Network Rail to carry out its statutory undertaking in respect of the regions covered by the aforementioned legislation.</p> <p>Additionally, the application (via the Framework Construction Traffic Management Plan) describes the proposed HGV routes and the routes for abnormal loads. These Routes interact with several of Network Rail's lines in the area. In total there are potential impacts on the Sheffield to Lincoln Line and the Gainsborough Central Line and potentially impact on 5 bridges and 1 crossing owned by Network Rail:</p> <p>HGV Route only</p> <ul style="list-style-type: none"> • 216A – A631 Thorndike Way Gainsborough Underline Bridge [Gainsborough Central line] • 215 - Lea Road Underline Bridge [Gainsborough Central line] • 84 – Spd3 84 A156 Lea Road Gainsborough Underline Bridge [Sheffield to Lincoln line] HGV and Abnormal Load route • Stow Park Road – Stow Park Public Crossing [Sheffield to Lincoln line] • 65C - Footbridge over Fosdyke Navigation Adj Br 66 Side of Line Bridge [Sheffield to Lincoln line] <p>Abnormal Load Route only</p> <ul style="list-style-type: none"> • A180 Road - 2 Skitter Beck Underline Bridge [Sheffield to Lincoln line] 	<p>2024. The Applicant is presently considering these terms and will be reverting to Network Rail in due course.</p> <p>The Applicant is also in the process of developing a SoCG with Network Rail to track resolution of the comments raised. The first version of this SoCG has been submitted at Deadline 1 [EN010142/APP/9.15].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>There are also several potential intersections with the South Humberside Main line and the Brocklesby and Immingham Branch line, but the details of these are unclear and will need to be clarified. Network Rail wishes to ensure that the Scheme will not have a detrimental impact on the Bridges, the Crossing or the operation of the Railway and that the safety of the Railway is maintained during the construction, operational and decommissioning phases of the Scheme. The Framework Construction Traffic Plan for the Order describes an increase in HGV movements to a daily peak of 120 HGVs (240 two-way movements) and 60 LGVs (120 two-way movements) during the peak construction period for the Principal site, with an average of 186 HGVs per day for the cable corridor (daily peak of 272 HGVs). The movements by construction staff are stated to be minimised by the use of internal shuttle buses but despite this during the construction peak are estimated as 500 staff vehicles per day. There is no information currently provided in the FTCP in relation to the operational or decommissioning phases. Network Rail wishes to ensure that the vehicle and HGV movements on, under or near the Bridges and the Crossing are undertaken safely at all times. Network Rail must be able to exercise adequate control over the use of the Bridges and the Crossing by the Applicant and its contractors to ensure that vehicle and HGV movements are properly regulated.</p> <p>The detail of the Framework Construction Traffic Management Plan is therefore being fully reviewed by its engineers to allow a more detailed response to be made and discussions undertaken with the Applicant. The Bridges and Crossing constitute land owned by Network Rail for the purpose of its statutory undertaking and, accordingly, this representation is made under section 127 of the Planning Act 2008. Network Rail also objects to all compulsory powers in the Order to the extent that they affect, and may be exercised in relation to, Network Rail's property and interests.</p> <p>In order for Network Rail to be in a position to withdraw its objection Network Rail requires:</p> <p>(a) agreements with the Applicant that regulate:</p> <p>(i) the manner in which rights over the Plots and any other railway property are acquired and the relevant works are carried out including terms which protect Network Rail's statutory undertaking and agreement that compulsory acquisition powers will not be exercised in relation to such land; and</p> <p>(ii) the carrying out of works in the vicinity of the operational railway network to safeguard Network Rail's statutory undertaking;</p> <p>(iii) the use of the Bridges and / or the Crossing by vehicular traffic;</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>(iv) the liability of the Applicant for necessary repairs and upgrades to the Bridges / Crossing as a result of its use by construction, operational and decommissioning traffic associated with the Scheme, including terms which protect Network Rail's statutory undertaking; and</p> <p>(v) a safe system of work for regular and irregular large and/or slow moving vehicles.</p> <p>(b) the inclusion of protective provisions in the DCO for its benefit. A draft of protective provisions for Network Rail has been included in the draft of the Order, including certain amendments requested by the Applicant. The version on the face of the Order should have been the standard version provided by Network Rail.</p> <p>Adjustments have subsequently been agreed with the Applicant and will require to be attached to the Framework Agreement when this is in final form. A draft Framework Agreement is currently with the Applicant's solicitors and still requires to be adjusted and agreed. Heads of Terms are also currently in circulation dealing with the terms of the land agreements which will be needed – these Heads of Terms are being adjusted and agreed. Network Rail is hopeful that an agreement can be reached with the Applicant but until such time, to safeguard Network Rail's interests and the safety and integrity of the operational railway, Network Rail objects to the Order. Network Rail requests that the Examining Authority treats Network Rail as an Interested Party for the purposes of the Examination, and reserves the right to produce additional and further grounds of concern when further details of the Scheme and its effects on Network Rail's land are available.</p>	
RR-324	Weightmans LLP on behalf of Northern Powergrid (Yorkshire) Plc	Interaction of the Scheme with Northern Powergrid's assets	<p>The following representations are submitted on behalf of Northern Powergrid (Yorkshire) Plc ('Northern Powergrid') as an electricity undertaker for the area within which the Tillbridge Solar DCO Project is located:</p> <p>Northern Powergrid is in principle supportive of the Tillbridge Solar DCO Project but has concerns relating to the impacts which the proposed scheme will have on Northern Powergrid's existing assets and any required improvement works. There is a significant amount of Northern Powergrid infrastructure within the red line boundary area of the Order and thus the Tillbridge Solar DCO Project has a direct impact on Northern Powergrid's existing and critical national infrastructure which serves significant numbers of customers in the local and wider area. Northern Powergrid's rights for these assets are essential in maintaining an uninterrupted power supply to the customers they serve.</p>	<p>The Applicant acknowledges that Northern Powergrid has various interests in respect of rights and apparatus within the proposed Order limits. These interests are presently known to be within plots 1-03, 1-06, 1-08, 1-09, 1-10, 2-02, 2-03, 2-05, 2-06, 2-07, 3-03, 3-05, 3-15, 3-17, 4-08, 4-12, 5-04, 5-06, 5-07, 5-09, 5-11, 5-12b, 6-01, 6-02, 6-04, 6-05, 6-11, 6-14, 6-15, 6-17, 6-18, 6-19, 6-20, 7-01, 7-03, 7-04, 7-04a, 7-08, 7-10, 7-11, 7-14, 9-03, 9-04, 9-05, 9-08, 9-09, 10-01, 10-02, 13-07, 13-12, 13-13, 13-14, 13-16, 13-17, 13-18, 16-01, 16-01a, 16-03, 16-06, 17-02, 17-03, 17-05, 17-06e, 17-07, 18-01, 18-07, 18-08, 18-22, 19-02, 19-04, 19-05, 19-06, 19-07, 19-09, 19-10, 19-11 and 20-01 and can be identified on the Land and Crown Land Plans [AS-040] and in the Book of Reference [EN010142/APP/4.3(Rev02)].</p> <p>The Applicant has also engaged with Northern Powergrid solicitors to agree protective provisions which would be included in the draft DCO. Discussions are progressing well, with the protective provisions for inclusion in the draft DCO substantively agreed with the exception of a few</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-206	National Grid Electricity Transmission plc	Existing and Proposed Infrastructure and Land Interests	<p>Northern Powergrid has a statutory duty to provide its customers with an uninterrupted supply of electricity and thus rightly objects to any scheme that would result in a breach to its duty. The Tillbridge Solar DCO Project seeks to interfere with Northern Powergrid's existing apparatus; there are many points at which the solar storage infrastructure including the generator crosses NPG's overhead lines and underground cables both of which are vital for Northern Powergrid's existing operations.</p> <p>Northern Powergrid therefore reserves the right to review the position as the scheme progresses and protect its existing apparatus including with bespoke protective provisions in the Order, as at this stage, the specific details of the DCO infrastructure including the depth, diameter and respective easement strips are unknown. NPG's existing apparatus may need to be diverted to accommodate the DCO project and therefore NPG requires bespoke protective provisions to protect its position and recover the costs of any required diversions.</p> <p>Northern Powergrid also has concerns over and object to the currently proposed protective provisions contained within the draft Order as they do not take into account site specific issues and do not accord with Northern Powergrid's standard protective provision requirements. The compulsory purchase powers incorporated into the DCO seeks to acquire land and interests which, if acquired, would adversely affect Northern Powergrid's ability to use, access, maintain and where necessary upgrade its equipment. It is not necessary to acquire these interests where an agreement between the parties would be more appropriate. Northern Powergrid is discussing its concerns with Tillbridge Solar Limited ('the Applicant') and the parties are working closely to reduce the project's impacts on Northern Powergrid's apparatus and agree bespoke protective provisions within the draft Order.</p> <p>Northern Powergrid is keen to keep an open dialogue with the Applicant and to engage with the Applicant's legal representative to agree appropriate amendments to the protective provisions. Should appropriate protective provisions be able to agreed upon, Northern Powergrid will remove its objection to the scheme accordingly.</p>	<p>outstanding matters. The parties are working to refine and resolve these matters, with a view to submitting an agreed set of protective provisions at the appropriate examination deadline once agreement has been reached.</p> <p>The Applicant acknowledges that National Grid Electricity Transmission Plc (NGET) has various interests in respect of land, rights and apparatus within the proposed Order limits. These interests are presently known to be within plots 19-07, 19-11, 20-04, 20-06, 20-08, 21-20, 21-23, 21-25, 21-26, 22-01, 23-02, 23-03, 23-04, 23-05, 23-06, 23-07, 23-08 and 23-10 and can be identified on the Land and Crown Land Plans [AS-040] and in the Book of Reference [EN010142/APP/4.3(Rev02)].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>existing Cottam substation. The Applicant is seeking temporary and permanent rights over several plots, including those shown on sheet 20, 22 and 23 of the Land Plans and referenced in the draft DCO as Work Number 4E and 4D. As a responsible statutory undertaker, NGET's primary concern is to meet its statutory obligations and to ensure that any development does not adversely affect those statutory obligations. NGET has a duty to protect its position in relation to infrastructure and land which is within or in close proximity to the draft Order Limits. Additionally, NGET must protect its future proposed infrastructure. NGET will therefore require appropriate protection for retained or proposed apparatus, including compliance with relevant standards for works proposed within close proximity of its apparatus or proposed apparatus. NGET's rights of access to inspect, maintain, renew and repair such apparatus must be maintained at all times and access to inspect and maintain such apparatus must not be restricted. Further, where the Applicant intends to acquire land or rights, or interfere with any of NGET's interests in land or NGET's apparatus, NGET will require appropriate protection. Further discussion and agreement with the Applicant is required in relation to the impact on its apparatus and rights. NGET owns and operates two 400kV overhead lines that are located within and in close proximity to the Order Limits for the Project. These assets form an essential part of the electricity transmission network in England and Wales. The details of the electricity assets are as follows: • 4ZM 400kV OHL – Bicker Fen – Spalding North – West Burton; Bicker Fen – Walpole – West Burton • 4VE 400kV OHL – Cottam – Keadby 1; Cottam – Keadby 2; Cottam – Grendon; Cottam – Staythorpe 2 • ZDA 400kV OHL - Cottam – West Burton; High Marnam – West Burton; Cottam – Staythorpe 1 • 4VK 400 kVA OHL - Cottam – Eaton Socon Wymondley 2? • Associated cable fibres Furthermore, based on information currently available, NGET has identified potential interfaces between the Project and the proposed NGET infrastructure projects detailed below. These proposals are part of NGET's Great Grid Upgrade – the largest overhaul of the grid in generations. NGET infrastructure projects across England and Wales are connecting additional renewable energy to homes and businesses. NGET must ensure adequate protection for its future projects both in terms of protection for future assets and future land and rights for the delivery of these projects. Co-operation Overarching National Policy Statement (NPS) for Energy EN-1 states that “[t]o support the achievement of the transition to net zero, government is accelerating the co-ordination of the development of the grid network to facilitate the UK's net zero energy generation development” (para 4.11.3). This is reflected in the NPS for Renewable Energy Infrastructure EN-3 which states at paragraph 2.8.34 that “a more co-ordinated approach to offshore-onshore transmission is required.” In line with good practice and the new policy considerations in the updated Energy NPS', particularly EN-5, which</p>	<p>The Applicant acknowledges that NGET operates the Cottam Substation and has rights of access to inspect, maintain, renew and repair such apparatus which must not be restricted. The Applicant has engaged with NGET's Strategy and Commercial team and has been advised that, in respect of the grid connection into the Cottam Substation, these matters would be addressed by way of Interface Agreement (IA). NGET confirmed to the Applicant on 8 November 2023 that as the connection date is 2028, they would look to agree the IA closer to that time.</p> <p>The Applicant has also engaged with NGET's solicitors to agree protective provisions which would be included in the draft DCO. NGET's solicitors have provided the Applicant with a copy of NGET's standard protective provisions, which the Applicant is currently reviewing. The Applicant will provide NGET with comments on their provisions in due course, with a view to refining and resolving issues as far as possible.</p> <p>The Applicant is also in the process of developing a SoCG with NGET to track resolution of the comments raised. The first version of this SoCG has been submitted at Deadline 1 [EN010142/APP/9.25].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>requires that “2.14.2 the construction planning for the proposals has been co-ordinated with that for other similar projects in the area on a similar timeline;”, NGET will continue to co-operate on co-ordination in respect of NHHM (North Humber to High Marnam) and seek to develop co-ordination and co-operation in the same localities with regards to SCRE / WRRE. The Parties have been co-operating since November 2023 in relation to NHHM under a confidentiality agreement, meeting to discuss such matters as respective delivery programmes, consultation timelines and coordination of temporary and permanent design. There has not yet been any interaction between the Parties on SCRE/WRRE, NGET wishes to hold conversation with the Project on this matter. The Project interacts with the NGET projects set out below, NHHM will be brought forward as a DCO. North Humber to High Marnam (NHHM) NHHM project involves the building of approximately 90km of new high voltage electricity transmission line and associated works between a new substation north of Hull at Creyke Beck in the East Riding of Yorkshire and a new substation at High Marnham in Nottinghamshire. The project is currently in the process of non-statutory consultation. The NHHM proposal will support the UK’s net zero target by reinforcing the electricity transmission network between the north of England and the Midlands and facilitate the connection of planned offshore wind generation and interconnectors with other countries. There is a potential interaction between the Project and NHHM, with route corridors overlapping immediately west of Cottam Power Station with the NHHM Eastern Corridor option. It is currently understood that based on expected construction periods for NHHM and the Project there will be an overlap in construction activity and therefore if the eastern corridor option is taken forward close co-ordination will be required. SCRE / WRRE This project includes the refurbishment of the cables along the existing lines around Cottam substation. Timescales are not yet known but NGET wish to work with the Project to better understand the interactions Protection of NGET Assets NGET will require Protective Provisions to be included within the draft Development Consent Order (the “Order”) for the Project to ensure that assets existing at the time of construction of the Project are adequately protected and to ensure compliance with relevant safety standards. NGET also requires that the Protective Provisions include protection for its future assets including the NHHM and SCRE / WRRE projects. The Awel Y Mor DCO provides a precedent for the protection of future assets via Protective Provisions. NGET is liaising with the Applicant in relation to such Protective Provisions. Accordingly NGET has not appended the version of the Protective Provisions it requires to be included in the Order to this Relevant Representation. However, NGET will submit these at Written Representation Stage, if not agreed between the parties by that point, with an explanation of any outstanding issues. NGET requests that the Applicant continues to engage with it in</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>relation to how the Applicant's works pursuant to the Order (if made) will ensure protection for those proposed NGET assets, along with facilitating all future access and other rights as are necessary to allow NGET to properly discharge its statutory obligations. NGET will continue to liaise with the Applicant in this regard with a view to concluding matters as soon as possible during the DCO Examination and will keep the Examining Authority updated in relation to these discussions. Compulsory Acquisition Powers in respect of the Project Where the Applicant seeks powers of compulsory acquisition over NGET land or rights, the Protective Provisions must require that the Applicant obtain NGET's consent to any compulsory acquisition of any such land or rights. NGET reserves the right to make further representations as part of the Examination process in relation to specific interactions with its NHHM and SCRE / WRRE projects, or any NGET projects identified during the Examination process, and as negotiations continue, but in the meantime will continue to liaise with the Applicant from NHHM and SCRE / WRRE with a view to reaching a satisfactory agreement during the Examination process and will keep the Examining Authority updated in relation to these discussions.</p>	

2.2 Local Authorities

Table 2-2. Applicant's Responses to Relevant Representations – Local Authorities

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Summary of matters in Relevant Representation	<p>Following the Planning Inspectorate confirmation that the above project has been accepted as an application for a Development Consent Order (DCO) - to construct operate (including maintenance) and decommissioning of ground mounted solar photovoltaic (PV arrays), Lincolnshire County Council (LCC) request to be registered as an Interested Party at the Examination.</p> <p>This letter provides a summary of the issues which LCC currently agrees/and or disagrees with together with an appropriate explanation in accordance with Planning Inspectorate note 8.3.</p> <p>In summary an outline of the principal topics which LCC intends to address in relation to the application during the examination are as follows:</p> <ul style="list-style-type: none"> • Minerals and waste – as Minerals and Waste Planning Authority • Highways and Transportation - as Local Highway Authority for Lincolnshire • Cultural Heritage/Historic Assets • Ecology • Landscape and Visual Impact • Fire Safety • Surface Water, Flooding and Drainage – as Lead Local flood Authority for Drainage • Agricultural Land use • Economic Regeneration/Skills (Including Public Rights of Way) • Public Health; and • Cumulative Impacts. 	The Applicant notes this comment.
RR-165	Lincolnshire County Council	Recycling and waste processing	<p>Minerals and Waste</p> <p>The comments on waste impacts are provided from reviewing the following documents - Volume 6, Environmental Statement (ES) Chapter 17: Other Environmental Topics; Chapter 18: Cumulative Effects and Interactions Volume 7, Framework Environmental Management Plans 7.8 Construction EMP; 7.9 Operational EMP; 7.10 Decommissioning EMP</p> <p>Recycling (particularly PV panels)</p>	<p>(Environmental Statement Ch17, 17.8.55) - The Applicant notes this comment. In response, the Applicant has prepared a Waste Topic Paper which focuses on the cumulative assessment of waste, which forms Appendix A to this report submitted at Deadline 1. In order to provide a robust assessment, two scenarios have been considered in the Waste Topic Paper with different assumptions around recovery rates:</p> <ol style="list-style-type: none"> 1. A “realistic worst case” of a 70% recovery rate, based on current and likely future recovery rates. 2. An “absolute worst case” based on the assumption that all construction and demolition waste goes to landfill.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Assumption in the Environmental Statement relating to recycling and waste disposal	<p>Landfill</p> <p>Despite an ambition to minimise landfill, much of the detail provided indicates a reliance on landfill for example: (Environmental Statement Ch17, 17.8.8) "The landfill diversion rate for the Scheme will be more than 60%" – This seems high, particularly in light of 17.8.12b ("good practice landfill diversion rate of 90%") and of the repeated statements about following the waste hierarchy (e.g. 17.8.20/24/27). (Environmental Statement Ch17, 17.8.18) An assumption is made that current landfill capacity will remain available as the WPA will consent more if required given the move in direction away from landfill this is very unlikely. (Environmental Statement Ch17, 17.8.39/52/60) Whilst committing to prioritise recycling, only assess operational impacts against landfill capacity (see also Ch18, 18.18.10c re cumulative impacts) – Is that correct as a "worst case" assumption?</p>	<p>(Environmental Statement Ch17, 17.8.8) A landfill diversion rate of 70% is considered a worst case for the purposes of the assessment, as set out in the Waste Topic Paper (Appendix A to this report). Table 3-16 of the Framework OEMP [EN010142/APP/7.9(Rev01)] and Table 3-15 of the Framework DEMP [EN010142/APP/7.10(Rev01)] have been updated at Deadline 1 to include a commitment to 70% waste recovery (diversion from landfill). A detailed OEMP and DEMP, which will be required to be substantially in accordance with the Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)], will need to be approved by the relevant Local Planning Authority (/Authorities) prior to the relevant phase, and this is secured by requirement 13 and requirement 20, respectively, of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>(Environmental Statement Ch17, 17.8.18)</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Request for further documents	Need for further documents/clarification CEMP section 2.9 – Commit to producing Construction Resource Management Plan (CRMP) & Decommissioning Resource Management Plan (DRMP) (both aka Site Waste Management Plan).	<p>The Applicant notes the comments regarding consenting of more landfill capacity, but notwithstanding the general move away from landfill, there is a requirement for WPAs to prepare Local Plans which identify sufficient opportunities to meet the identified needs of their area for the management of waste streams, in accordance with the National Planning Policy for Waste (Ref 1-13). The Applicant does not consider it likely that landfill would be completely eliminated in future; and in the absence of any realistic method for estimating future landfill capacity, it is reasonable to assume that the future capacity is similar to current capacity.</p> <p>(Environmental Statement Ch17, 17.8.39/52/60) Impacts against landfill capacity have been considered for construction, operation and decommissioning, since landfill capacity is the only category of sensitive receptor for waste that is included in the IEMA Guidance methodology (IEMA Guide to: Materials and Waste in Environmental Impact Assessment, Guidance for a proportionate approach, 2020 (Ref 1-14)) and follows the waste hierarchy in accordance with paragraph 5.15.2 of NPS EN-1 (Ref 1-17). A quantitative cumulative waste assessment is provided in the Waste Topic Paper contained in Appendix A of this report.</p> <p>There is no commitment in section 2.9 of the Framework CEMP [EN010142/APP/7.8(Rev 01)] to produce a Decommissioning Resource Management Plan. Decommissioning is covered in the Framework DEMP [EN010142/APP/7.10(Rev01)], which includes measures to be adopted in relation to the recycling, recovery and disposal of waste and a requirement for a Decommissioning Resource Management Plan (DRMP) A Construction Resource Management Plan (CRMP) (also known as a Site Waste Management Plan) is for construction only.</p> <p>As outlined in paragraph 2.9.19 of the Framework CEMP [EN010142/APP/7.8(Rev 01)] a CRMP will be prepared by the Principal Contractor prior to the commencement of construction, which will specify the waste streams to be estimated and monitored and goals set with regards to the waste produced. The CRMP will be finalised with specific measures to be implemented prior to the start of construction, in accordance with requirement 12 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>Waste management during operation and decommissioning will be covered by a detailed OEMP and DEMP, which will be substantially in accordance with the Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)]. The detailed OEMP and DEMP will need to be approved by the relevant planning authority (/authorities) and works associated with the Scheme will need to be carried out in accordance with the approved OEMP and DEMP, as secured by requirements 13 and 20 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>The detailed OEMP will include (by way of a section within the body of the management plan or a separate appendix) specific provision for material and waste management, therefore a separate Operational Resource Management Plan is not proposed. As outlined in the Framework OEMP [EN010142/APP/7.9(Rev01)], a register of waste loads leaving the Order limits would be maintained to provide a suitable audit trail for compliance purposes and to facilitate monitoring and reporting of waste types, quantities and management methods.</p> <p>As outlined in paragraph 2.10.2 of the Framework DEMP [EN010142/APP/7.10(Rev01)] a resource management plan will be prepared at the decommissioning stage: <i>“Prior to the decommissioning works commencing, a Decommissioning Resource Management Plan (DRMP) (also referred to as a Site Waste Management Plan) will be prepared by the Applicant, which will provide a waste estimate, specify key responsibilities, reporting and auditing and waste recovery targets.”</i></p>
RR-165	Lincolnshire County Council	Request for Waste Management Strategy	<p>As requested to other solar NSIPs developers, the OEMP must be accompanied by a Waste Management Strategy/Plan along the following lines. Separate sections covering waste from commissioning, operational and decommissioning phases. For each phase show the overall total and split by year: Tonnage of each type of waste. Whether any of those waste type have specific status – e.g. hazardous. Preferred fate for each waste type of waste – e.g. reuse – including how they’ve considered the Waste Hierarchy. Hierarchy of backup plan(s) if proposed fate is not available – e.g. recycling. ‘Worst case’ fate – e.g. landfill. Proposed destination (host Waste Planning Authority) of each type of waste, including if this differs depending on ‘fate’.</p>	<p>Waste management during operation and decommissioning will be covered by a detailed OEMP and DEMP, which will be required to be substantially in accordance with the Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] and will need to be approved by the relevant planning authority (/authorities), as secured by requirements 13 and 20 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>The requested information will be included in the relevant management plans at the appropriate stage and when the required level of detail is available. Table 3-16 of the Framework OEMP [EN010142/APP/7.9(Rev01)] submitted at Deadline 1 has been updated to include a requirement that the requested list of information is to be provided at the relevant phase of the Scheme.</p>
RR-165	Lincolnshire County Council	Study Area in Environmental Statement relating to waste management	<p>(Environmental Statement Ch17, 17.8.10b) Study Area for waste management – Please justify the areas selected as it is expected to see a more local area to align with the proximity principle.</p>	<p>The Study Areas for waste are defined in line with the IEMA Guidance (IEMA guide to: Materials and Waste in Environmental Impact Assessment, Guidance for a proportionate approach, 2020 (Ref 1-14)) and were provided in Appendix 1-1: EIA Scoping Report of the Environmental Statement [APP-051]. The IEMA Guidance outlines that the waste assessment is conducted at a regional level and, where justified, a national level. The assessment is not carried out at a local (county) level. In addition, as outlined in the Ministry of Housing, Communities and Local Government, Ministry of Housing, Communities & Local Government (2018 to 2021) and Department for Levelling Up, Housing and Communities Waste Guidance (published 2015) the self-sufficiency and proximity principles does not require each waste planning authority to manage all of its own waste. <i>“Though this should be the aim, there is no expectation that each local planning authority should deal solely with its own waste to meet the requirements of the self-sufficiency</i></p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<i>and proximity principles. Nor does the proximity principle require using the absolute closest facility to the exclusion of all other considerations. There are clearly some wastes which are produced in small quantities for which it would be uneconomic to have a facility in each local authority. Furthermore, there could also be significant economies of scale for local authorities working together to assist with the development of a network of waste management facilities to enable waste to be handled effectively. The ability to source waste from a range of locations/organisations helps ensure existing capacity is used effectively and efficiently, and importantly helps maintain local flexibility to increase recycling without resulting in local overcapacity."</i>
RR-165	Lincolnshire County Council	Assessment of cumulative effects in Environmental Statement relating to waste	(Environmental Statement Ch17, 17.8.62) The statement that "All effects are not significant" needs further details to establish how this is determined based on that panels will be reaching end of life stage during operation and when combined with the other consented and proposed solar NSIPs in Lincolnshire consider this impact will be significant	A quantitative cumulative waste assessment is provided in the Waste Topic Paper included in Appendix A of this report.
RR-165	Lincolnshire County Council	Assessment of cumulative effects in Environmental Statement relating to waste	(Environmental Statement Ch18, Table 18-1) As PINS say: "The Environmental Statement should also consider the requirement for cumulative [waste] impacts to be assessed at decommissioning due to a number of solar farms in the local area also likely to be decommissioned at a similar timescale". The Environmental Statement refers to section 18.18 but this lacks detail about the provision of recycling facilities to process the discarded materials from the development.	A quantitative cumulative waste assessment is provided in the Waste Topic Paper included in Appendix A of this report.
RR-165	Lincolnshire County Council	Minerals safeguarding	In respect of Minerals safeguarding have no further comment to add to the PEIR comments and if there is any further update needed this will be included in the Council's Local Impact Report (LIR).	The Applicant notes this comment.
RR-165	Lincolnshire County Council	Methodology and assessment in the Environmental Statement relating to transport	Highway, Transportation, Surface Water Flooding and Drainage Environmental Statement Chapter 16 Transport and Access and Appendix 16.2 - Transport Assessment. The methodology and assessment seem reasonable, the impacts of LGVs and HGVs are fairly high in terms of percentages on the key routes (Table 8.10) with several links increasing by over 100%. However, these are for the development peak hours 6am-7am and 7pm-8pm; and the total flows in these hours would be less than current peak hour flows on the links. There is therefore not expected to be any traffic capacity concerns with regard to the development. The above assessment is predicated on the shift patterns of workers for the developments being 7am-7pm; and it is therefore essential that this is secured through a requirement	The Applicant notes and acknowledges the comments made regarding the methodology and assessment. It is acknowledged that there are instances of increases in flows of more than 100% in the construction peak hours, although these percentages are relative to low base flows. The Applicant is in agreement that there will be no capacity concerns. Working hours are set out in section 5.3 of the Framework CTMP [EN010142/APP/7.11(Rev 02)] which sets out that the proposed working hours of construction staff are expected to be 07:00- 19:00 (12-hour shift). A detailed CTMP, which will be substantially in accordance with the Framework CTMP [EN010142/APP/7.11(Rev 02)] will need to be approved by the relevant Local Planning Authority in consultation with the relevant highway authority prior to the commencement of the authorised

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>and monitored through the Framework Construction Traffic Management Plan (Section 5.3 states working hours and travel patterns etc).</p> <p>The draft DCO seems to be very similar to the DCO which was approved for Gate Burton in July 2024 by the Secretary of State. It is considered the wording in Articles 8 to 16 is intended to give the developer similar rights as a standard Statutory Undertaker (e.g. Anglian water or British Gas) and therefore they would still be required to follow the Council's Permitting Scheme to obtain consents prior to working in the highway.</p>	<p>development, as secured by requirement 14 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>It is agreed that the draft DCO [EN010142/APP/3.1(Rev03)] largely aligns with the DCO as made for the Gate Burton Energy Park. It is confirmed that as per Article 8(3) of the draft DCO [EN010142/APP/3.1(Rev03)] given Tillbridge Solar Limited is not the street authority within the Order limits, various approvals required from LCC as the street authority for works within the highway will be required, under the provisions of sections 54 – 106 of the New Roads and Street Works Act 1991 (Ref 1-15).</p>
RR-165	Lincolnshire County Council	Drainage proposals	<p>Surface Water, Flooding and Drainage – as Lead Local flood Authority for Drainage Environmental Statement Appendix 10.3 Flood Risk Assessment and Appendix 10.4 Outline Drainage Strategy.</p> <p>These documents deal with the surface water flood risk satisfactorily. Run off rate will be kept to greenfield, and attenuation will be provided for 100 year event + 40% climate change. Impermeable areas have been identified (BESS, Substations) and indicative storage volumes calculated. The proposal is for swales to be provided on site to provide attenuation. The details of the drainage proposals should be secured by appropriately worded requirements.</p>	<p>This comment is noted in respect of the sufficiency of Appendix 10-3: Flood Risk Assessment [APP-097] and Appendix 10-4: Outline Drainage Strategy [APP-098]. The detailed design of the authorised development will need to accord with the drainage proposals contained within the outline drainage strategy as secured by requirement 5 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. This will ensure that the detailed drainage design and authorised development is substantially in accordance with the outline drainage strategy and that the authorised development implements surface water drainage in accordance with the approved detailed design. These measures will ensure that the drainage proposals are secured as part of the authorised development.</p>
RR-165	Lincolnshire County Council	Approach and methodology in Environmental Statement relating to heritage	<p>Cultural Heritage Heritage Assets</p> <p>Welcome the approach and methodology set out in the DBA and Environmental Statement for assessing built heritage and historic landscape. Agree with the conclusions drawn for many of the built heritage assets affected within the study area with some amendments.</p>	<p>The Applicant notes and acknowledges this comment. Detailed responses to the more specific comments on the heritage assets made in RR-165 are provided below.</p>
RR-165	Lincolnshire County Council	Assessment of Designated and non-designated assets in the ES	<p>Designated and non-designated assets</p> <p>Refer to Historic England's comments for designated assets and have no further comments at this stage. Agree with much of the assessment for built heritage set out in the ES. This includes the decision to scope several farmsteads from the DBA to the ES. While welcome this approach, encourage further consideration regarding the impact of the proposed scheme on the experience of the historic landscape both in its own right and in terms of setting for the various farmsteads and associated assets within the order limits which are set out below.</p> <p>Note the current criteria for determining the value of heritage assets set out in the Impact Assessment Methodology and</p>	<p>The assessment criteria for assigning the value of heritage assets, magnitude of impact and significance of effect in EIA terms has been agreed with PINS as part of the EIA Scoping process (refer to Appendix 1-1: EIA Scoping Report [APP-051] and Appendix 1-2: EIA Scoping Opinion [APP-052]).</p> <p>Those historic farmsteads that are not of demonstrable national or regional significance to be granted listed status are recorded on the Lincolnshire County Council Historic Environment Record (LCC HER) as non-designated heritage assets reflecting their local importance. The 2015 publication, 'Building the Evidence Base for Historic Farmsteads in Greater Lincolnshire' (Ref 1-16) provided a county wide study of historic farmsteads categorised according to their level of survival. This corresponds to Table 8-1 in Chapter 8: Cultural Heritage of the</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
-------------	---------	-------	----------------------------------------	-------------------------------------

shown in Tables 8-1, 8-2, and 8-3. A key concern is the consideration of historic farmsteads and their immediate setting. Based on the current assessment criteria, the current value, level and degree of impact is stated as a 'low' or 'negligible adverse' outcome for many assets. Given that a significant number will experience noticeable and significant changes to their setting, would ask for greater clarity on this determination where the level of change will result in the full and/or partial loss of setting.

A discussion of the cumulative effects of the scheme on historic farmsteads is not in the Environmental Statement assessment criteria (Chapter 8, Cultural Heritage, 8.4.14 to 8.4.21). Installing solar panels on the agrarian landscape will compromise how these farmsteads are experienced and appreciated, both individually and collectively, as the viewer moves through the landscape, encountering associated assets such as barns and neighbouring farmsteads. Note that the cumulative effects of other solar projects are addressed in Chapter 18 (EN010142/APP/6.1); however, details on the cumulative impact of the scheme for particular asset types (in this case, farmsteads) would be helpful in supporting the individual assessments reached for each farmstead receptor discussed in the ES. Regarding farmsteads assessed in the ES, make the following comments:

Environmental Statement [APP-039] when determining the value of existing built heritage historic farmsteads as detailed further in the table below:

SURVIVAL	VALUE
Extant	Low (Non-designated heritage assets that can be shown to have demonstrable local importance)
Altered (less than 50% of their historic form)	Low (Non-designated heritage assets that can be shown to have demonstrable local importance)
Altered (more than 50% of their historic form)	Very Low (Non-designated heritage assets whose heritage values are compromised by poor preservation or damaged so that too little remains to justify inclusion into a higher grade)
House only survives	Low (Non-designated heritage assets that can be shown to have demonstrable local importance)

As such, historic farmsteads were assigned as low or very low value assets within **Chapter 8: Cultural Heritage** of the Environmental Statement [APP-039].

Farmsteads outside the Order limits were scoped out of further assessment in the **Cultural Heritage DBA (Appendix 8-2)** of the Environmental Statement [APP-059] where those farmsteads had already experienced more than 50% loss and erosion of setting. Historic farmsteads scoped in for assessment in the ES, regardless of their percentage loss, was due to their proximity to the Scheme where their setting may be impacted. Based on their low or very low value, the magnitude of impact was assessed to determine the significance of effect in each case. To trigger a significant effect on assets of low value, a high magnitude of impact (in accordance with the assessment criteria established through EIA Scoping) would be required, such that the value of the heritage asset is totally altered or destroyed through physical impact or comprehensive alteration to its setting affecting its value, seriously impeding the ability to understand and appreciate the asset. Section 8.9 of **Chapter 8: Cultural Heritage** of the Environmental Statement [APP-039] concluded that there were no significant adverse effects on non-designated historic farmsteads. These are discussed further for each farmstead in responses below.

Furthermore, Paragraph 5.9.7 of NPS EN-1 (Ref 1-17) confirms that the Secretary of State should consider the impacts of a scheme on non-designated heritage assets but only:

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p><i>“on the basis of clear evidence that such heritage assets have a significance that merits consideration in that process.”</i></p> <p>Paragraph 2.10.117 of NPS EN-3 (Ref 1-18) states that Applicants should <i>“consider what steps can be taken to ensure heritage assets are conserved in a manner appropriate to their significance, including the impact of proposals on views important to their setting.”</i></p> <p>As set out in paragraph 8.8.6 of Chapter 8: Cultural Heritage of the Environmental Statement [APP-039], the Scheme design has applied buffers around historic farmsteads. The methodology adopted is in accordance with NPS EN-1 (Ref 1-17) and NPS EN-3 (Ref 1-18) (see relevant excerpts set out above), applying a proportionate approach that reflects the value of the non-designated assets. The change experienced by the setting of the historic farms is low or very low. This is set against an overall context where the value of the historic farmsteads has already been eroded due to the loss of their historic fabric and/or the presence of modern sheds. The inclusion of buffers as part of the Scheme as well as excluding these assets from the Order Limits will ensure negligible adverse effects that are not significant. This demonstrates a proportionate approach to the consideration of impacts upon non-designated heritage assets with the Scheme including mitigation measures in the form of buffers in accordance with NPS EN-1 (Ref 1-17) and EN-3 (Ref 1-18). The Applicant does not consider that there is a need for further mitigation, as this would not alter the significance of effect from that assessed in section 8.9 of Chapter 8: Cultural Heritage of the Environmental Statement [APP-039].</p> <p>It is further noted that the Gate Burton Energy Park Order was recently granted by the Secretary of State on 12 July 2024, along with the Cottam Solar Project Order, granted by the Secretary of State on 5 September 2024. Gate Burton and Cottam adopted a similar approach to the assessment of impacts on non-designated historic farmsteads as that taken for this Scheme, considering the significance of each asset and including buffers as embedded mitigation to reduce impacts, where appropriate. Both the relevant Examining Authorities and Secretary of State agreed that the applicants for Gate Burton and Cottam had adequately assessed the significance of the heritage assets affected by the proposed developments and that the extent of likely impacts was understood, thereby meeting the requirements of NPS EN-1 Ref 1-17), NPS EN-3 (Ref 1-18), the National Planning Policy Framework (NPPF) (Ref 1-20), National Planning Practice Guidance (NPPG) (Ref 1-21) and local development plan policy. Whilst the Scheme is required to be considered on its own merits, the Secretary of State’s decision to grant the Gate Burton Energy Park and Cottam Solar Project Orders supports the Applicant’s position that the Scheme has sufficiently considered</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Mitigation measures relating to Harpswell Low Farm	<p>Harpswell Low Farm (MLI118024/MLI97809)</p> <p>The current proposals for the solar array will surround much of the farmstead, except for a parcel of grassland to the northeast between the farm and the A631. What specific measures are in place to reduce the visual effects due to the changes in the composition of views to and from the farmstead, such as the approach to the property? The scheme's integrated design and mitigation strategy offers various options to reduce intervisibility; what will be deployed for this receptor? The solar farm control centre and BESS may be located a short distance from the farm (Chap. 8 Cultural Heritage, 8.9.131). Please provide further</p>	<p>potential impacts upon historic farmsteads, in a proportionate manner reflective of their significance.</p> <p>In respect of a discussion of the cumulative effects of the Scheme on historic farmsteads, this was not included in Chapter 8: Cultural Heritage of the Environmental Statement [APP-039], as cumulative impacts were assessed in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. The cumulative impact of the solar panels on the Scheme itself upon the agrarian landscape has been assessed under the Historic Landscape Character section paragraphs 8.9.434 – 8.9.445 in Chapter 8: Cultural Heritage of the Environmental Statement [APP-039]. The pattern, layout and key boundaries and features of the historic landscape will not be altered by the presence of the Scheme whilst buffers around residential properties within post-medieval farmsteads have been incorporated within the embedded design to retain their scattered pattern in the landscape. The magnitude of impact was assessed as low upon the historic landscape character, resulting in a minor adverse significance of effect which does not trigger a significant effect.</p> <p>In addition, the surrounding agrarian landscape and historic association of farm buildings with each farmstead scoped in for assessment was taken into account in relation to the contribution to their setting and historic function, as well as their wider historic relationship with similar dispersed historic farmsteads in the area as noted for example in paragraph 8.9.130 of Chapter 8: Cultural Heritage of the Environmental Statement [APP-039].</p> <p>It is also noted that agricultural use of fields allocated for solar PV panels will be possible with sheep grazing alongside and underneath the panels. This would allow agricultural activity to continue reflecting the traditional character of the landscape with farming as the viewer moves through the landscape, maintaining how the farmsteads are experienced individually and collectively. Furthermore, the scheme infrastructure is reversible and upon decommissioning the traditional relationship between the farmsteads and the landscape would be reinstated unaltered.</p> <p>Harpswell Low Farm is described on the LCC HER as a partially extant farmstead with less than 50% loss of traditional buildings. It is therefore a non-designated heritage asset of low value.</p> <p>The farmstead is surrounded by mature tree planting largely screening views from and to the asset, with large modern sheds located to the west and north. The heritage assessment in Chapter 8: Cultural Heritage of the Environmental Statement [APP-039] considered alteration to the asset's wider setting from the Scheme, as well as intervisibility with the wider dispersed farmstead settlements. Partial loss of historic fabric and the presence of modern farm buildings has already eroded the setting, with mature trees screening intervisibility in kinetic views to and from the</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>details on its design and location and/or where this information is located in the document library.</p>	<p>property. With the retention of existing field boundaries and field patterns, along with the embedded mitigation of buffer fields and additional planting to the west, the introduction of Scheme infrastructure into the landscape would result in a slight change to the farmstead's setting. This would have a low impact and a negligible adverse effect which is not significant, in accordance with the assessment criteria set out within section 8.4 of Chapter 8: Cultural Heritage of the Environmental Statement [APP-039].</p> <p>From a visual perspective, residential receptors at Harpswell Low Farm benefit from mature woodland screening around the property; this is outside the Order limits and will not be removed as a result of the Scheme. The modern agricultural barns also provide a degree of screening to panels to the north and west of the property. No panels are proposed to the east of the private access track to the property, with panels set back beyond a strip of ecological mitigation (as shown on the Indicative Landscape Masterplan [AS-028] and a retained hedgerow with trees to the west; in combination, these will prevent views of panels from the farmstead. Effects are not considered to reach a threshold where a residential visual amenity is a consideration, as described in Paragraphs 12.4.27 to 12.4.36 and 12.8.41 to 12.8.45 in Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043]. With respect to landscape matters, the farmstead, which is not within any identified views or protected landscape; and is not a designated heritage asset, is considered to contribute to the wider agricultural context but at a local level. This is reflected in the low landscape value accorded to the host LLCA 3a Till Vale Open Farmland in the LVIA, but nevertheless acknowledging the wider significant residual effect on LLCA3a (at the operational Year 15 stage) within Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043].</p> <p>The Solar Farm Control Centre and equipment storage area will be a new building located to the south of Harpswell Low Farm. The components of this are described as part of Work No. 8 within Schedule 1 of the draft DCO [EN010142/APP/3.1(Rev03)] and the location is secured within the Works Plans [EN010142/APP/2.3(Rev02)]. The exact location is fixed within the specific area shown on the Works Plans. The detailed design of the Solar Farm Control Centre and equipment storage area will be subject to future consideration with the DCO, should it be approved, to secure its location in accordance with the Works Plans [EN010142/APP/2.3(Rev02)] and the design parameters for the detailed design to be in accordance with those elements sets out in the Outline Design Principles Statement [AS-058]. Requirement 5 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] requires approval of detailed design by the relevant planning authority prior to the commencement of development of the solar arrays, Solar Stations, BESS, substations and works associated with the construction of the</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Mitigation measures for Harpswell Grange	<p>Harpswell Grange (MLI118025)</p> <p>The embedded mitigation plans for this asset are noted, such as retaining the grassland along the approach to the farm from the A631 on the western side of the track. To reduce harm to this asset, a similar setback to preserve the grassland on the eastern side of the track should be considered. Environmental Statement Chapter 12 Landscape and Visual Amenity, 12.6.116 Table 12-5 notes a view of the access track to the farm. Please confirm if representative viewpoints from the farmstead will also be considered. Please provide specific details of the proposed mitigation measures, such as screening or planting for this asset (if any).</p>	<p>Cable Route Corridor. The detailed design will need to be in accordance with the principles established by both the Works Plans [EN010142/APP/2.3(Rev02)] and the Outline Design Principles Statement [AS-058]. The authorised development must be built in accordance with the approved details.</p> <p>A Framework LEMP [EN010142/APP/7.17(Rev02)] forms part of the Application. This includes details of the principle of the proposed green infrastructure to be delivered as part of the Scheme and in accordance with the Indicative Landscape Masterplan [AS-028]. The green infrastructure will be secured by Requirement 7 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. This requires that no development commences until a detailed LEMP has been submitted to and approved by the relevant planning authority. The LEMP has to be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] and the LEMP must be implanted as approved as part of the discharge of requirement 7 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>Harpswell Grange has experienced a significant loss of more than 50% of its historic form as noted on the LCC HER description. The loss of traditional farm buildings has been replaced with large modern sheds on the site which diminishes the contribution to the farmyard setting of the farmhouse, which is a non-designated heritage asset of very low value.</p> <p>Introducing further mitigation to that set out below would not alter the significance of effect which has been assessed in section 8.9 of Chapter 8: Cultural Heritage of the Environmental Statement [APP-039] as a negligible adverse (not significant) effect on an asset of very low value.</p> <p>Embedded mitigation set out in the Framework LEMP [EN010142/APP/7.17(Rev02)], comprises vegetation along the access track and is largely intended to reduce views of panels from the two properties immediately to the east, including set-backs and new woodland to the west; and proposed hedgerows and 'ecological enhancement' areas to the east. The latter, along with an area of existing grassland outside the Order limits, will avoid excessively reducing views for residents towards the Cliff, as well as maintaining a degree of openness along the access track towards Harpswell Grange. Although a representative viewpoint along this access track was included at the EIA Scoping stage, this was amended to the nearby junction of the A631 and Hemswell Lane to better represent publicly accessible views. These viewpoints were agreed with the LCC Landscape Officer at the time. A detailed LEMP which will be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] will need to be approved by the Local Planning Authority prior to construction and the above mitigation will need to be carried out in accordance with the</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Mitigation measures for Hermitage Low Farm	<p>Hermitage Low Farm (MLI118028)</p> <p>The solar array will surround the original farmhouse except for a parcel of grassland adjacent to the farm to the east and a narrow strip of land to the rear of the property, some 250 meters in length and approximately 100 meters wide. While the inclusion of an area of biodiversity enhancement and setback buffer is noted, encourage greater retention of the immediate grassland associated with the farmstead, which would help mitigate some of the harm caused to the setting of this receptor.</p>	<p>detailed LEMP, as secured by requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>Hermitage Low Farm is described on the LCC HER as a partially extant 19th century farmstead detached from the main working complex, with a partial loss (less than 50%) of traditional buildings and with large modern sheds located on the site. The non-designated heritage asset is therefore of low value.</p> <p>The property is located outside the Order limits in a setback area which includes its immediate garden, grassland to the east and hedgerows to the south-east. Additional biodiversity enhancement areas have been allocated further to the east and to the west, within the Order limits, as part of the embedded design mitigation that is intended to maintain the asset's visual setting. Fenestration to the eastern elevation faces towards the biodiversity BZ 11 area with the nearest solar PV panels proposed approximately 250m to the east which would be screened by additional planting along the existing field boundary.</p> <p>The above mitigation is set out set out in the Framework LEMP [EN010142/APP/7.17(Rev02)]. A detailed LEMP which will be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] will need to be approved by the Local Planning Authority prior to construction and the above mitigation will need to be carried out in accordance with the detailed LEMP, as secured by requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>This asset has been assessed in Chapter 8: Cultural Heritage of the Environmental Statement [APP-039] taking into account retention of the immediate grassland associated with the historic farmstead, resulting in a negligible adverse (not significant) effect.</p> <p>With respect to landscape and visual matters, the exclusion of areas from the Order limits and inclusion of biodiversity enhancement zones (as shown on the Indicative Landscape Masterplan [AS-028] were largely informed by the most open views from the property being towards the east and south-east, where the proposed set-back to panels will retain a development-free aspect in these directions. Functional, modern farms screen views both to and from the property to the south and east, reducing the requirement for stand-offs and buffers accordingly.</p>
RR-165	Lincolnshire County Council	Mitigation measures for Billyards Farm	<p>Billyards Farm (Low Farm) (MLI118029)</p> <p>The solar array will surround the approach to the farm in all directions. Despite retaining a small parcel of grassland immediately to the east and to the rear of the asset, the current proposals will significantly affect the ability to appreciate this asset's significance. Introducing solar panels and infrastructure will harm the ability to appreciate the agrarian association with</p>	<p>The only surviving element of Billyards Farm (Low Farm) is the farmhouse as recorded on the on the LCC HER. The presence of large modern sheds noted on the site are located directly to the north of the property which are out of scale and character with the farmhouse. This asset is outside the Order limits, with a field to the east and two to the south also excluded from the Order limits which retains the historic field pattern associated with the farmhouse shown on OS map 1885. Ecological mitigation is included to the west of the property to reduce any</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>the farmstead. The erosion of this asset's setting is comparable in scale to Hermitage Low Farm (located approximately 1000 meters northeast of this site). Request the applicant to consider further design mitigation to limit the impact on these assets.</p>	<p>intervisibility with the solar PVs as set out in the Framework LEMP [EN010142/APP/7.17(Rev02)]. A detailed LEMP which will be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] will need to be approved by the Local Planning Authority (/Authorities) prior to construction and the above mitigation will need to be carried out in accordance with the detailed LEMP, as secured by requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>The buffer zone and embedded mitigation set out in the Framework LEMP [EN010142/APP/7.17(Rev02)] around the farmhouse maintains its visual setting, with the placement of the Scheme having little effect on the ability to understand the asset's heritage interests in its wider setting with the field boundaries maintained. The presence of large modern farm buildings has significantly eroded the setting of the asset along with the loss of associated curtilage historic farm buildings. As concluded in section 8.9 of Chapter 8: Cultural Heritage of the Environmental Statement [APP-039], the magnitude of impact to the asset's wider setting is assessed as very low, as a change that would barely affect the value of the asset or nor the ability to understand and appreciate the asset.</p> <p>Further mitigation measures would not alter the existing assessment which would remain a negligible adverse (not significant) effect as there would still be some small change to the wider agricultural setting from the presence of solar infrastructure.</p> <p>With respect to landscape and visual matters, the exclusion of areas to the south of the farmstead from the Order limits and the proposed woodland belt to the west (as shown on the Indicative Landscape Masterplan [AS-028]) are intended to retain open views from the principal front elevation. The presence of functional outbuildings to the north provided screening, whilst views to the west will be limited by a proposed tree belt, as set out on the Indicative Landscape Masterplan [AS-028].</p>
RR-165	Lincolnshire County Council	Mitigation measures for Manor Farm Heapham	<p>Manor Farm Heapham (MLI118062)</p> <p>Based on the current proposals, this asset's landscape and setting would change from agricultural to semi-industrial. To reduce the harm to this asset, encourage additional considerations around setback options to avoid losing the ability to appreciate its heritage interests. The Environmental Statement (Cultural Heritage 8.9.173) states that a solar station and BESS set out in the LEMP (EN010142/APP/7.17) are located to the east of this asset (Field 78). Have not been able to find further details in the LEMP. Please specify which part of the LEMP contains this information.</p>	<p>Manor Farm Heapham is described on the LCC HER as a partially extant 19th century farmstead where there has been significant loss (greater than 50%) of traditional buildings. There are large modern sheds located on the site. These factors have contributed to a significant erosion of the setting and historic interest of the farmstead such that its value is very low.</p> <p>The property is located outside the Order limits, along with land to the north. A track to another modern farm building is also excluded from the Scheme. To the south, opposite the property across Common Lane, embedded ecological mitigation has included woodland planting to screen views of solar PV panels from the farmhouse, as set out in the Framework LEMP [EN010142/APP/7.17(Rev02)]. The Framework</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Mitigation measures for Heapham Cliff	<p>Heapham Cliff (MLI118063)</p> <p>Please provide details of the setback buffers applied as part of the embedded mitigation stated in 8.9.178. What representative LVIA viewpoints regarding intervisibility have been produced for this receptor (if any)? The solar boundary occupies the approach to this asset in both directions from the roadside and immediate grassland areas and parcels of land surrounding the farm. Request that the current mitigation measures for this asset be reconsidered to determine if any further work can be done to reduce the harm caused to setting.</p>	<p>LEMP refers to Figure 3-1: Indicative Principal Site Layout Plan [AS-055] and Indicative Landscape Masterplan [AS-028] for the locations of mitigation planting. A detailed LEMP which will be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] will need to be approved by the Local Planning Authority (/Authorities) prior to construction and the above mitigation will need to be carried out in accordance with the detailed LEMP, as secured by requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>Introducing further mitigation would not alter the significance of effect which is assessed in Chapter 8: Cultural Heritage of the Environmental Statement [APP-039] as a negligible adverse (not significant) effect on an asset of very low value.</p> <p>The mitigation measures included as part of the landscape design for the Scheme as shown on the Indicative Landscape Masterplan [AS-028], reflect the existing arrangement of vegetation and outbuildings within the curtilage to the farmstead. Views from the main elevation are towards the south, across the existing hedge along Common Lane, which will be supplemented by tree planting. It should be noted that the mitigation planting design is also influenced by young tree planting to the north-east, associated with the recently built poultry unit.</p> <p>Heapham Cliff is a 19th century farmstead of U plan, with large modern sheds located to the south-east on the site. It is a non-designated heritage asset of low value.</p> <p>The farmstead and modern shed buildings are located outside the Order limits. The Applicant's Change Request, which was approved by the ExA on 24 October 2024, has resulted in the exclusion of the gardens to the west of the farmstead from the Order limits, as shown on the Indicative Landscape Masterplan [AS-028]. An area to the west of these gardens includes Sensitive Archaeology Site 5, with no solar PV development proposed in this location. Additional ecological embedded mitigation is proposed to enhance the existing boundaries to the east, south and south-west of the farmstead to enhance screening obscuring intervisibility with solar PVs as set out in the Framework LEMP [EN010142/APP/7.17(Rev02)]. A detailed LEMP, which will be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] will need to be approved by the Local Planning Authority (/Authorities) prior to construction and the above mitigation will need to be carried out in accordance with the detailed LEMP, as secured by requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>The introduction of solar infrastructure in fields to the south of the farmstead would result in a slight change to the wider agricultural setting associated with the property, although the existing field boundaries and</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Mitigation measures for Grange Farm	<p>Grange Farm (Heapham Grange) (MLI118064)</p> <p>The proposed development, including the solar boundary, borders land to the east of this asset. To reduce harm to the asset's setting and loss of its immediate rural landscape, a setback buffer should be considered for the field immediately east of the farm.</p>	<p>field patterns are retained. As concluded in section 8.9 of Chapter 8: Cultural Heritage of the Environmental Statement [APP-039], taking into account the embedded mitigation, the alteration to the wider farmland context with solar PVs would have little effect on the ability to understand and appreciate the asset. This would result in a negligible adverse (not significant) effect on an asset of low value.</p> <p>The mitigation design, set out in the Framework LEMP [EN010142/APP/7.17(Rev02)] was largely informed by visual amenity, whereby open views from the farmstead are restricted by vegetation to the west and outbuildings to the east and south. These also limit the landscape and visual contribution of the single-storey property to the wider agricultural context.</p> <p>Views of the adjacent fields were largely limited to gaps between outbuildings, around which tree planting is proposed.</p> <p>Grange Farm is a partially extant 19th century farmstead which has experienced a significant loss of more than 50% of its traditional buildings, as recorded on the LCC HER. Large modern sheds are located to the east of the property. These factors have contributed to a significant erosion of the setting and historic interest of the farmstead such that its value as a non-designated heritage asset is very low.</p> <p>The farmstead is outside the Order limits, as are four fields that extend westwards from the farmstead. Other fields to the south and west have been allocated as biodiversity enhancement areas as embedded mitigation. Solar PVs are proposed in the fields to the east of the farmstead which would be screened by ecological woodland planting as set out in the Framework LEMP [EN010142/APP/7.17(Rev02)]. A detailed LEMP which will be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] will need to be approved by the Local Planning Authority (/Authorities) prior to construction and the above mitigation will need to be carried out in accordance with the detailed LEMP, as secured by requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)]. The principal fenestration of the farmstead faces northwards across Common Lane with some intervisibility with solar PVs to the north.</p> <p>As assessed in section 8.9 of Chapter 8: Cultural Heritage of the Environmental Statement [APP-039] the setting of the asset would be altered but this would have no real change on the ability to understand or appreciate its heritage interests, with the existing field boundaries and field pattern retained. Consequently, the magnitude of impact is very low with a negligible adverse effect that is not significant.</p> <p>With respect to landscape and visual matters, a woodland belt immediately east of the property is proposed following consultation with</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Mitigation measures for South View	<p>South View (MLI118065)</p> <p>The fields running east towards Manor Farm and Heapham Cliff (MLI118063) and perpendicular to Common Lane should be excluded from the site boundary. This area has been part of the historic field system between the farms since the 1800s. Excluding it from the development would help preserve the historic landscape around these farmsteads and reduce the impact on their setting. Including this grassland for solar panels would significantly harm the significance of these assets. Reconsidering the solar boundary or detailing specific mitigation measures would lessen the impact on this area.</p> <p>The above is based on a review of the assessment work conducted on several farmsteads abutting or within the order limits. While significant progress has been made, with many agreeable conclusions, there are still several points of concern regarding the treatment of historic farmsteads. Welcome the opportunity to discuss any of these points with the applicant. In many cases, adding specific design mitigations or making small adjustments to the site boundaries would help the scheme better address changes to these heritage assets and manage the impacts on the historic environment as the project moves forward.</p>	<p>the resident. This will both reduce visual effects and limit any potential adverse impact on movement of horses along the parallel private track as set out in the Framework LEMP [EN010142/APP/7.17(Rev02)].</p> <p>South View is a partially extant 19th century farmstead which has experienced a partial loss of less than 50% of its traditional buildings, as recorded on the LCC HER. Large modern sheds are located to the east of the property. These factors have contributed to the erosion of the setting and historic interest of the farmstead which is of low value.</p> <p>The farmstead is outside the Order limits which includes the field that extends westwards from the property. Fields opposite the farmstead to the south across Common Lane are also excluded from the Order limits. Other fields to the north, west and south have been allocated as biodiversity enhancement areas as part of the embedded mitigation set out in the Framework LEMP [EN010142/APP/7.17(Rev02)]. A detailed LEMP which will be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] will need to be approved by the Local Planning Authority (/Authorities) prior to construction and the above mitigation will need to be carried out in accordance with the detailed LEMP, as secured by requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)]. Solar PVs are proposed in the fields to the east of the property only. The asset's main fenestration faces across Common Lane and the fields to the south, so there is limited intervisibility with the Scheme.</p> <p>The setting of the asset would be slightly changed with a limited effect on the ability to understand or appreciate its heritage interests. Existing field boundaries and field patterns are retained so the historic landscape remains legible. Consequently, the magnitude of impact is very low resulting in a negligible adverse effect that is not significant, as set out in section 8.9 of Chapter 8: Cultural Heritage of the Environmental Statement [APP-039].</p> <p>The extant hedgerow along the north side of Common Lane is generally taller and more dense than other field boundary hedgerows within the Principal Site, resulting in an appreciable change in character along this section of the road and also limiting views of the fields to the north. From a landscape and visual perspective, the contribution of these fields to the north of Common Lane is therefore more limited as set out in Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043]</p>
RR-165	Lincolnshire County Council	Methodology, mitigation and assessment of archaeology in the ES	<p>Archaeology</p> <p>Support the direction of travel of this scheme with regard to archaeology. The standard suite of archaeological evaluation including trial trenching has been undertaken to an appropriate scale for this</p>	<p>An Archaeological Mitigation Strategy (AMS) [EN010142/APP/9.5] has been submitted at Deadline 1 of the Examination. The contents of the AMS have been consulted on and agreed with the LCC County Archaeologist.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>scheme and the submitted documents including the field evaluation results have been undertaken to a high standard and provide the necessary baseline evidence to move forward. Engagement with the archaeological consultants has been effective and ongoing, and understand the proposed Archaeological Mitigation Strategy will be shortly forthcoming. Once it has been agreed it will form the basis for the site-specific archaeological work required to appropriately deal with the developmental impact across the redline boundary.</p> <p>Archaeological evaluation work is continuing on the cable route corridor. Appendix 8-5-2: Cable Route Corridor Geophysical Survey Report (APP-67) states that 'An area of approximately 46.4ha was surveyed with c. 27.5ha unable to be surveyed due to waterlogged ground conditions and access difficulties.'</p> <p>Further work is required to obtain sufficient baseline evidence to inform fit for purpose mitigation of surviving archaeology along the route and any associated ground impacts. Further geophysical survey coverage if possible along with sufficient trial trenching will be required and the results will form the basis for effective archaeological mitigation of the cable route.</p> <p>Full trenching results are essential for effective risk management and to inform programme scheduling and budget management. Failing to do so could lead to unnecessary destruction of heritage assets, potential programme delays and excessive cost increases that could otherwise be avoided. Look forward to continuing effective engagement with the archaeological consultants to ensure the archaeology affected by this scheme is dealt with in a reasonable and effective way.</p>	<p>In accordance with the AMS, further archaeological evaluation work along the Cable Route Corridor will be undertaken post-consent, once the exact route has been confirmed at detailed design stage.</p> <p>Requirement 11 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] requires that the authorised development must be implemented in accordance with the AMS and no part of the authorised development can commence until a written scheme of archaeological investigation for that part has been submitted to and approved by the relevant planning authority (/authorities).</p>
RR-165	Lincolnshire County Council	Methodology, mitigation and assessment of ecology in the ES	<p>Ecology The APP-040 (6.1 Chapter 9 Ecology and Nature Conservation) sets out the biodiversity and ecological elements of the Applicant's Environmental Statement.</p> <p>A broad suite of ecological surveys and investigations have been undertaken by the Applicant. The results of these surveys have been used to inform the Environmental Statement for the project and to be used in the development of any necessary mitigation measures. Surveys undertaken include: Habitat and botanical surveys including both terrestrial and aquatic habitats.</p> <p>Detailed surveys for protected and notable species, including terrestrial invertebrates, great crested newts, reptiles and amphibians, birds, bats, and riparian mammals.</p>	The Applicant notes this comment.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>In addition to the above, the Applicant has worked collaboratively on ecological data collection with the developers of other nearby large scale solar developments. This approach is to be commended as the use of a common datasets and methodologies will help to ensure consistency of ecological data between applications.</p> <p>APP-040 identifies a range of ecological impacts. These potential impacts include permanent loss of habitats, temporary loss or damage to priority habitats, impacts on protected and priority species and spread of invasive non-native species (INNS). During operations and maintenance, the main potential impact is likely to be disturbance of protected and priority species.</p> <p>Decommissioning impacts are predicted to be similar to construction impacts but at a more limited geographical extent and timescale.</p> <p>The Project is reliant on a package of avoidance, mitigation and enhancement measures to address the ecological impacts. To this end, the Applicant has prepared a Framework Construction Environmental Management Plan (CEMP), a Framework Operational Environmental Management Plan (OEMP) and a Framework Decommissioning Environmental Management Plan (DEMP. Measures proposed in the CEMP, OEMP and DEMP will need to be secured in the DCO. A Register of Environmental and Commitments (APP-209) has been prepared which provides a helpful summary of the mitigation identified for the Project including embedded mitigation measures, which have been designed into the project.</p>	
RR-165	Lincolnshire County Council	Methodology, mitigation and assessment of statutorily designated sites	<p>Impacts on statutorily designated sites</p> <p>The Applicant has undertaken desk studies and searches of information held in Local Ecological Records Centres to identify important ecological sites in the vicinity of the proposal.</p> <p>There are no internationally important sites designated for biodiversity within 10km of the proposal, however, given the potential for impacts on river and sea lamprey which are components of the Humber Estuary SAC and Ramsar site, a Habitats Regulation Assessment (HRA) report has been submitted (APP-094) and concludes that there will be no Likely Significant Effect on river or sea lamprey. The Examining Authority will need to satisfy itself that sufficient information has been submitted by the Applicant to enable this conclusion to be reached.</p>	The Applicant notes this comment.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>There is one site nationally important site (Ashton's Meadow SSSI) designated for biodiversity importance within the 2km of the proposal. In addition to this, there are 13 non-statutory sites designated for biodiversity importance within 2km of the Order limits. The locations of statutorily designated sites is displayed in (APP-164) and the locations of non-statutory sites is displayed in (APP-165). Where necessary avoidance and mitigation measures are proposed.</p>	
RR-165	Lincolnshire County Council	Assessment of cumulative effects in the ES	<p>Cumulative Effects There are a number of development proposals of varying scales in the vicinity of this proposal. These range from small scale housing developments to NSIP scale energy developments. A list of projects included in APP-124 and the locations of other nearby solar NSIP proposals are presented in APP-125. A detailed assessment of the cumulative impacts of these proposals on sensitive ecological receptors in the area will be required. Details of the approach to cumulative effects are presented in APP-049. The assessment concludes that there will be no significant adverse effects on ecology arising from cumulative impacts. In addition to this APP215, 216 and 217 reports on the interrelationships of nearby solar NSIPs. LCC welcomes the clearly set out approach to this complex but important area of the assessment.</p>	<p>The Applicant notes this comment and confirms a detailed assessment of the cumulative impacts of the listed projects in the vicinity of the Scheme has been provided in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049], and concludes no significant adverse effects on ecology arising from cumulative impacts.</p>
RR-165	Lincolnshire County Council	Delivery of BNG	<p>Biodiversity Net Gain Given the scale and nature of the proposed development LCC will expect the project to deliver significantly more than 10% Biodiversity Net Gain (BNG). The Applicant has set out their broad approach to BNG is AS-062. This document identifies the opportunities of the Scheme to deliver BNG and states that the final design has not yet been finalised. However, based on current plans, the Scheme is predicted to result in a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units. LCC notes however that the trading rules set out in the Statutory BNG metric user guide are not currently being met. This is specifically in relation to medium distinctiveness habitats due to the loss of arable field margins and rural trees. LCC encourages the applicant to continue to make progress with this work to provide clarity around what the project will deliver for biodiversity at the earliest possible stage. LCC also encourages the Applicant to work with other developers and stakeholders in the area to identify opportunities to deliver BNG</p>	<p>The Scheme accords with NPS EN-1 (Ref 1-17) in building-in beneficial biodiversity as part of good design. The requirement to provide a minimum 10% gain is not mandatory for NSIPs until November 2025. The Applicant has demonstrated through the submitted Biodiversity Net Gain Report [AS-062] that the Scheme will achieve at least the 10% despite this not being a mandatory requirement. The Applicant has committed to achieving a minimum level of BNG through the Scheme, as secured by both requirements 7 (landscape and ecological management plan) and 8 (biodiversity net gain) of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. Requirement 8 provides that construction cannot commence until a BNG strategy has been submitted and approved by the relevant planning authority, in consultation with the relevant statutory nature conservation body (being Natural England). The BNG strategy must be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)], which states at paragraph 4.6.2 that the Applicant is committed to achieving a minimum of 10% BNG, in accordance with the terms of the Biodiversity Net Gain Report [AS-062]. This approach is consistent with that adopted in the Gate Burton Energy Park Order 2024 [EN010131], which the Secretary of State (agreeing</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>strategically. LCC welcomes ongoing engagement with the Applicant in relation to BNG.</p> <p>LCC welcomes the Applicant's commitment to delivering BNG. These commitments will need to be secured in the DCO by an appropriately worded requirement and the applicant will need to demonstrate that the commitments made to delivering BNG are achievable.</p> <p>Further detailed comments on ecology and biodiversity will be provided in the Local Impact Report.</p>	<p>with the Examining Authority) confirmed is an appropriate mechanism for securing BNG (refer to paragraphs 4.13 and 7.4 of the Secretary of State's Decision Letter and paragraph 5.2.14 of the Examining Authority's Recommendation Report).</p> <p>Whilst each project will be determined on its own merits, it is important that there is consistency in decision making. The approach to secure BNG for the Scheme is acceptable and in accordance with policy.</p> <p>as set out in the Biodiversity Net Gain Report [AS-062], the trading rules within the Metric are not satisfied for the 'Medium' distinctiveness habitats of 'Cropland – Arable field margins cultivated annually' and 'Individual trees – Rural tree'. Despite the trading rules not being strictly passed, qualitatively, it is deemed that the increased provision of proposed 'Grassland – Other neutral grassland' and 'Woodland and forest – Other woodland; broadleaved' provide similar functional benefits to 'Cropland – Arable field margins cultivated annually' and 'Individual trees – Rural tree'. Therefore, the failure in 'Medium' distinctiveness habitats is proposed to be considered acceptable in this case. It is not deemed suitable to retain/create the 'Cropland – Arable field margins cultivated annually' when the Principal Site will be converted to a grassland / solar array mix and a margin habitat of 'Grassland – Other neutral grassland' is more suitable to this habitat composition. This would also not meet the objectives of the Scheme to deliver a solar energy project, if having to retain arable land to achieve the trading rules, which would miss an opportunity to provide renewable energy and offset greenhouse gas emissions from alternative energy sources.</p>
RR-165	Lincolnshire County Council	Methodology, mitigation and assessment of Landscape and Visual Impacts in the ES	<p>Landscape and Visual Impact</p> <p>By reason of its mass and scale, the proposed development would lead to significant adverse effects upon landscape character and visual amenity. The development has the potential to transform the local landscape by altering the character on a large scale. This landscape change also has potential to affect wider landscape character, at a regional or county scale, by replacing large areas of agricultural or rural land with solar development, affecting the current openness, tranquillity and agricultural character, that are identified as defining characteristics of the area. The Council is particularly concerned about the landscape character effects through changes to the land use over a large area. Significant landscape effects are subsequently identified within the LVIA chapter "due to the change in land use and the massing of the panels and associated structures".</p> <p>The scale and extent of development would also lead to significant adverse effects on views from receptors, changing</p>	<p>The Applicant acknowledges that the operation of the Scheme will result in a residual significant adverse effect upon Local Landscape Character LLCA 3A Till Vale and a small number of visual receptors, as presented in Chapter 12: Landscape and Visual Amenity Assessment of the Environmental Statement [APP-043]. However, the Applicant has carefully designed the Scheme in consultation with stakeholders to ensure landscape and visual impacts are minimised as far as practicable by proposing a comprehensive landscape and ecological design which increases connectivity and local access through the landscape, with the inclusion of buffers from sensitive features and properties and the creation of new green infrastructure to provide screening and enhance the landscape condition as discussed in the Design and Access Statement [AS-031] and in the Framework Landscape and Ecological Management Plan [EN010142/APP/7.17(Rev02)]. This design is illustrated on the Indicative Landscape Masterplan [AS-028].</p> <p>Paragraph 5.10.5 of NPS EN-1 (Ref 1-17) confirms that:</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>from views within an agricultural or rural landscape to that of a landscape containing large scale solar development.</p> <p>The development has been identified in the LVIA as resulting in a significant change to a variety of visual receptors, with significant residual visual effects identified from three viewpoints (and associated receptors), largely arising from open elevated views from the Cliff. The LVIA judges that the residual effects would be from "higher-sensitivity receptors such as residents where it is not possible to sufficiently screen expansive views of the site due to elevation on the Cliff".</p>	<p><i>"Virtually all nationally significant energy infrastructure projects will have adverse effects on the landscape..."</i></p> <p>Paragraph 5.10.12 states that:</p> <p><i>"Outside nationally designated areas, there are local landscapes that may be highly valued locally...locally valued landscapes should not be used in themselves to refuse consent, as this may unduly restrict acceptable development."</i></p> <p>Paragraph 5.10.13 goes on to state that:</p> <p><i>"All proposed energy infrastructure is likely to have visual effects for many receptors around proposed sites."</i></p> <p>As set out in paragraphs 6.4.36 and 6.4.37 of the Planning Statement [AS-029], the Scheme has sought to minimise landscape and visual amenity impacts through design iteration, and whilst these may be long term, the residual and localised visual effects will be temporary. It is the Applicant's position that the substantial benefits and need for the Scheme in delivering critical national priority infrastructure to contribute towards meeting national legally binding targets to decarbonise the generation of electricity through supporting renewable energy and to transition to net zero, outweighs the residual landscape and visual effects when applying the planning balance.</p>
RR-165	Lincolnshire County Council	Assessment of cumulative landscape and Visual Impacts in the ES	<p>Landscape and Visual Impact</p> <p>The cumulative landscape and visual effects of the proposed development are also of concern, particularly when assessed alongside the proposed Cottam, West Burton and approved Gate Burton Solar sites. The mass and scale of these projects combined would lead to adverse effects upon landscape character and visual amenity over an extensive area. The landscape character of the local, and potentially regional area, may be completely altered, particularly when experienced sequentially while traveling through the landscape.</p>	<p>Section 18.13 of Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] sets out the Applicant's assessment of cumulative landscape and visual effects. In summary, cumulative residual landscape effects (at Year 15) will predominantly arise through the presence and perceptual influence of the Scheme in conjunction with the Cottam Solar Project within Local Landscape Character Area 3a Till Vale Open Farmland, which encompasses the Principal Site. Cumulative residual visual effects will predominantly arise through the combination of the Scheme and the Cottam Solar Project from representative viewpoints on Lincoln Cliff.</p> <p>The Scheme includes a buffer of proposed biodiversity and ecological enhancement to the south, providing an undeveloped gap to the Cottam Solar Project in this direction. A further undeveloped gap lies to the north of the A631. Significant adverse landscape effects arising from the presence of more extensive solar infrastructure should, however, be considered in the context of long-term green infrastructure benefits.</p> <p>Further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is provided in the Joint</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>Report on the Interrelationship with other Nationally Significant Infrastructure Projects [APP-215 to APP-217].</p> <p>It is also noted that development consent was recently granted for Gate Burton Energy Park (12 July 2024) and Cottam Solar Project on (5 September 2024). Both projects are located within the Zone of Theoretical Visibility of the Scheme. The Secretary of State concluded that the cumulative effects of the Gate Burton and Cottam projects, in combination with each other and the West Burton and Tillbridge projects, lead to moderate adverse landscape effects and material harm to landscape character but that there are no significant adverse cumulative effects on visual receptors. The Secretary of State, in deciding to grant development consent for both projects, concluded that the harms, including cumulatively with other solar projects in the area, were clearly outweighed by the substantial weight to be attached to the critical and urgent need to deliver low-carbon and renewable energy. This is also the Applicants conclusion as set out in the Planning Statement [AS-029], which states that in terms of the overall planning balance, the clear and substantial benefits of the Scheme clearly outweigh any adverse effects, which would be localised, short-term, temporary and/or reversible at the end of the Scheme's lifetime, in accordance with the presumption in favour of consent in NPS EN-1 (Ref 1-17). These recent decisions are material considerations in assessing the merits of the Scheme.</p>
RR-165	Lincolnshire County Council	Vegetation removal and protection	<p>The submission has provided detailed information in regards to the retention and removal of hedgerows on the Hedgerow Removal Plans and the Arboricultural Impact Assessment (AIA) details tree protection and removal. However, at this stage the Council has not checked on the consistency between plans and documents, such as with the layout plans or management plans, and this will be picked up for the Local Impact Reports through a more rigorous review of information submitted. The considerations of vegetation removal and protection appear to consider wider highways works, which can have an affect on vegetation such as for abnormal load access or improvements to the highway, however again, these will be reviewed further for the LIR.</p> <p>The proposal would evidently deliver landscape and ecological improvements through mitigation areas and planting. However, this will be dependent upon the information set out in the Framework Landscape and Ecological Management Plan and Indicative Landscape Masterplans which illustrate the mitigation, which should be further explored, and assume would be refined at the detailed design stages.</p>	The Applicant notes this comment.
RR-165	Lincolnshire County Council	Requirement 7 in the Draft DCO	The DCO should include for approval of any subsequent detailed landscape and ecological mitigation scheme (planting works), as referenced in draft Schedule 2, Requirement 7. This	Requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)] provides that a Landscape and Ecological Management Plan must be submitted to and approved by the relevant planning authority (/authorities) before

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Management and maintenance of vegetation	<p>should clearly link to any landscape mitigation scheme that is submitted as part of the DCO, and subsequently that which has been assessed as part of the LVIA.</p> <p>Vegetation removal identified within the draft DCO (articles 39., 40., and Schedule 12) should be clarified, and processes put in place to ensure any vegetation loss is agreed with the relevant parties prior to any works being carried out. This should clearly relate to hedgerow removal plans and AIA, and this must also include vegetation removal or works to facilitate wider highways and access works, such as for abnormal loads.</p> <p>The DCO should also include for an appropriate period of landscape maintenance, currently referenced at article 31(11), that ties into the Framework Landscape and Ecological Management Plan, and would expect an initial 15 year period of management and maintenance as a minimum, which would align with the assessed residual landscape and visual effects, and then this would subsequently be regularly reviewed at a reasonable period, such as every three to five years.</p>	<p>works can commence on the Scheme. The LEMP is required to be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)], meaning that any landscape and ecological mitigation measures included in the Framework LEMP (which was submitted as part of the DCO Application, and the measures contained therein were considered in the assessment of landscape and visual effects presented in Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043]) must be reflected in the detailed Landscape and Ecological Management Plan(s) submitted to, and required to be approved by, the relevant local planning authority (/authorities).</p> <p>All vegetation removal will be required to be undertaken in accordance the Construction Environmental Management Plan(s), which must be submitted to, and approved by, the relevant local authority (/authorities), including (where relevant) the local highways authority, before construction can commence under Requirement 12 of the draft DCO [EN010142/APP/3.1(Rev03)]. Requirement 12 provides that the detailed Construction Environmental Management Plan(s) must be in substantial accordance with the Framework CEMP [EN010142/APP/7.8(Rev 01)], which sets out controls on vegetation removal works including a requirement that all tree works must be undertaken in accordance with Appendix 12-7: Arboricultural Impact Assessment [APP-107 to APP-109] and, should any additional tree works be required, these must be discussed with an arboriculturist and no works can be undertaken without the prior consent of the relevant local planning authority. The Hedgerow Removal Plan [AS-044] is also specifically referenced. Refer to Table 3-4 of the Framework CEMP [EN010142/APP/7.8(Rev 01)] for more detail.</p> <p>In terms of landscape maintenance, article 31(11) of the draft DCO [EN010142/APP/3.1(Rev03)] provides that “the maintenance period” of five years does not apply to landscaping or ecological mitigation works. For such works, “the maintenance period” means the period set out in the Landscape and Ecological Management Plan, which is required to be submitted to, and approved by, the relevant planning authority in accordance with Requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)]. The Framework LEMP [EN010142/APP/7.17(Rev02)] includes express provision for long-term management and maintenance of landscape planting, beyond the initial five-year period.</p>
RR-165	Lincolnshire County Council	Fire Safety and mitigation	<p>Fire Safety</p> <p>In recognition of the emerging technology of Battery Energy Storage Systems (BESS) and the challenges this poses to Fire and Rescue Services the National Fire Chiefs Council circulated a letter to all Chief Fire Officers on the 22 August 2023 drawing attention to the updating of Renewable and low carbon energy Planning Policy Guidance that was updated in August 2023 by</p>	<p>The Applicant notes the comments and guidance referenced by Lincolnshire County Council in respect of the safety mechanisms for the BESS. The Applicant continues to consider current and emerging guidance in respect of BESS fire safety controls. The Applicant has been engaging with the Council and the Lincolnshire Fire and Rescue Service over the past several months to ensure their requirements are addressed.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Framework Battery Safety Management Plan	<p>the former Department of Levelling Up, Housing and Communities to include reference to BESS.</p> <p>This planning policy guidance encourages planning authorities to consult with their local Fire and Rescue Service as part of formal planning consultations and directing developers to the National Fire Chiefs Council guidance on BESS schemes. From the discussion with the Lincolnshire Fire Service who have developed standing advice for BESS based on national guidance a program of monitoring and risk assessment has been identified which will be necessary once the BESS has been established to ensure it complies with the Outline Battery Management Safety Plan and Emergency Response Plan. During the first year of operation this will involve 21 days of work for the Fire Service and then two days in each subsequent year for the lifetime of the development.</p> <p>The need for this monitoring and assessment will enable early engagement to ensure the required standards are being complied with; to ensure the BESS is constructed to the correct standards with support from the Fire Service; early development of emergency response plans; familiarisations of the BESS for local fire crews and overview by the Fire Service; development of on-going maintenance and updating risk information; and assurance for local residents and communities that the BESS are being independently inspected and monitored to reduce the risk of a fire.</p> <p>To enable the Fire and Rescue Service to undertake the necessary monitoring to ensure the BESS is in accordance with the relevant requirement 6(2) a financial contribution is required via the Protective Provision within the DCO to the Fire Service so that it has sufficient resources in places to undertake monitoring of the BESS connected to this project. This approach has been agreed as part of the recently approved Gate Burton DCO and therefore there is a precedent for this approach to be followed for this application.</p> <p>The risk of a battery fire in the BESS/substation is rated as 'low' and where the battery storage is itself containerised, thus reducing the risk of damage to the energy storage which may cause fires. An Outline Energy Storage Safety Management Plan has been submitted.</p>	<p>The Applicant will update the Framework Battery Safety Management Plan (FBSMP) [APP-225] during Examination to reflect the latest National Fire Chief Council's guidance. This will ensure that the Scheme incorporates the latest guidance delivering an optimum design solution with respect to fire safety.</p> <p>The draft DCO [EN010142/APP/3.1(Rev03)] will ensure that the outline principles are secured during implementation. This is through requirement 6 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], which requires the submission and approval of a battery safety management plan (BSMP) by the relevant planning authority. The BSMP must be substantially in accordance with the FBSMP and the BSMP implemented as approved. Compliance with the Outline Design Principles Statement [AS-058] is secured through Requirement 5 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>The comment from Lincolnshire County Council directly below acknowledges that "<i>The Framework Battery Safety Management Plan appears to capture all of the details discussed during the engagement meetings</i>" and reflects current guidance.</p> <p>The Applicant has also agreed to a programme for monitoring and assessment of the Scheme once constructed to ensure the Lincolnshire Fire and Rescue service is satisfied the Battery Safety Management Plan has been properly implemented, as requested by this representation, within the protective provisions at Part 8 of Schedule 15 of the draft DCO [EN010142/APP/3.1(Rev03)]. This includes commitments to provide a financial contribution to the Fire Service so that it can undertake this monitoring and assessment, at clause 94 of those protective provisions.</p>
			<p>Framework Battery Safety Management Plan – The document appears to capture all of the details discussed during the engagement meetings. There are clear links to the NFCC guidance document and relevant standards, e.g. NFPA 855.</p>	<p>The Applicant notes this comment.</p> <p>Lincolnshire Fire and Rescue Service (LFR) has been consulted on the contents of the Framework Battery Safety Management Plan (BSMP)</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Agricultural land, soil type and Impacts on food production	<p>The document also outlines that specific details, in relation to the site layout and confirmation of required items, e.g. water tanks, are not confirmed. Guidance is referenced, but Lincolnshire Fire and Rescue will reserve the right to continue to engage and outline requirements/objections following the receipt of specific site design details.</p> <p>The Fire Service wish to continue to be engaged and views sought during the examination and reserve the right to comment on specific details of the fire strategy including drafting of suitably worded requirements to ensure the correct level of information is available and assessed before any development commences.</p> <p>Agricultural Land Use Lincolnshire is home to 10 percent of English agricultural production. Its combination of climate, soil type and topography make the county ideal for a variety of crops. There are significant proportions of wheat, oilseed rape, sugar beet and potatoes, with the county producing 12 percent of England's arable crops.</p> <p>Lincolnshire is also home to around 25% of the UK's vegetable production, and 21% of ornamental crop production. This high level of production is vital to the county's economy, generating a Gross Value Added of £446m in 2012. To preserve fresh produce and minimise supply chain distance, highly productive food hubs have built up in the south of the county. The importance of this sector for the local economy is reflected in the number of jobs it generates: if this food supply chain is included alongside food retail and catering in the county, the number of employees exceeds 100,000. In respect of the land use for this particular project the soils locally are described as</p> <p>Salop Association soils on the west of the site: Slowly permeable seasonally waterlogged reddish fine loamy over clayey, fine loamy and clayey soils associated with fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.</p> <p>Beccles 1 Association soils on the north-west and east of the site:</p>	<p>[APP-225] and the Applicant is working with the LFR to close out any comments. Progress on the agreement of the Framework BSMP [APP-225] is tracked through the Statement of Common Ground with Lincolnshire County Council [EN010142/APP/9.9].</p> <p>The Applicant will prepare a detailed Battery Safety Management Plan, which will be substantially in accordance with the Framework BSMP [APP-225] which will need to be approved by the Local Planning Authority, and any works relating to the measures set out in the Battery Safety Management Plan must be carried out in accordance with the Plan, as secured by requirement 6 of the draft DCO [EN010142/APP/3.1(Rev03)]. Lincolnshire County Council will be able to consult the LFR during this process to ensure that they can comment on specific details of the fire strategy. The Applicant welcomes Lincolnshire County Council's comments on the wording of requirement 6 to ensure that the views of the Fire Service are taken into account.</p> <p>There is no commercial horticultural or ornamental production on land within the Order limits.</p> <p>Agricultural land quality was a key consideration in the Applicant's site selection process as set out in paragraph 4.5.13 of Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and paragraph 3.5.5 of the Design and Access Statement [AS-031].</p> <p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into account reductions to the Order limits following the Applicant's Change Application (accepted by the ExA on 24 October 2024), for the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is provided within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p> <p>As set out in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. All other infrastructure will</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>Slowly permeable seasonally waterlogged fine loamy over clayey soils, associated with similar clayey soils</p> <p>Ragdale Association soils on a small area on the northern boundary: Slowly permeable seasonally waterlogged clayey and fine loamy over clayey soils. Some slowly permeable calcareous clayey soils especially on slopes.</p> <p>Wigton Moor Association soils in the far east: Permeable fine and coarse loamy soils variably affected by groundwater, the drier soils being on slightly raised sites. Generally flat land. The augering of the site has been undertaken in line with TIN 049 and the MAFF 1988 Guidelines, one auger point per hectare and with occasional soil pits particularly where soil types vary. Soil types have been laboratory analysed for textural assessment to provide accurate information that can be relied upon in calculating the ALC grade.</p> <p>At a time when there are both food shortages across the globe and issues of food security, related to climate change and the weaponizing of food during the Ukraine conflict, the loss of productive farmland should be avoided, wherever possible. The NFU confirm that the UK is only 58% self-sufficient in food and the loss of this area of strong agricultural production is therefore significant. The NFU believes that productivity should increase on UK farms. Much of the land is arable and the loss to the local farming economy will be significant. Cereals and wider combinable crops are grown locally on similar soils.</p>	<p>be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a Decommissioning Environmental Management Plan (DEMP). In accordance with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)] submitted as part of the Application. The only potential permanent removal of land from agricultural use may result from proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However the potential change of use of 0.07% of agricultural land that is BMV land to proposed woodland is not considered to be significant, and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60 year operational period has the potential to accrue improvement to soil function over a large area. Whilst not food production, woodland presents benefits provided by the Scheme in terms of biodiversity and provides future opportunities for farm diversification.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 of Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire. Land can continue in agricultural production through the operational phase and that following operation, the land used for the Scheme can revert back to current agricultural management upon decommissioning.</p> <p>Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] assesses the loss of agricultural land in combination with all cumulative solar schemes (Gate Burton Energy Park, West Burton Solar Project and the Cottam Solar Project and others set out in Table 18-22 in Chapter 18 of the Environmental Statement [APP-049]). This confirms that in combination with all cumulative solar developments that there is still not a significant effect on agricultural production as a result of the schemes. The area of agricultural land that would be temporarily taken out agricultural use across all four schemes would be 2.2% of agricultural land in Lincolnshire.</p> <p>The Applicant has also prepared a report setting out the cumulative effects of solar projects on BMV land within Lincolnshire, which is located at Appendix B of this response document. This report further concludes that the potential permanent loss of BMV land in Lincolnshire as a result of solar DCO projects would be 0.8%, and would be 0.27% as a result of</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>ground mounted solar TCPA projects. This amounts to only 0.9% of all BMV land within Lincolnshire permanently lost to solar projects.</p> <p>The Secretary of State in his recent decisions for Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] recognised the local concerns on the loss of productive agricultural land but concluded that, on a cumulative basis alongside the other solar projects (including the Tillbridge Solar Project), that the cumulative assessments forming part of each application have suitably considered cumulative effects. The Secretary of State at paragraph 4.178 of the Gate Burton Energy Park decision states that the <i>“cumulative loss of BMV land in Lincolnshire due to NSIP solar projects amounts to 0.83% of the total BMV land with a further 0.21% loss to TCPA solar projects. The Secretary of State considers that this is only around 1% of the total BMV land in Lincolnshire, further noting that the land will be lost for a temporary, albeit long-term period and that the land can be returned upon decommissioning of development to its original state. The Secretary of State places great importance on BMV land but is satisfied that the siting of the Proposed Development on BMV land has been justified.”</i></p> <p>The Applicant, through its site selection process sought to minimise impacts upon BMV land and through design iteration of the Scheme, has further minimised impacts. The siting of the Scheme on BMV land is justified and the loss of agricultural land and therefore potential food production would be temporary and reversible allowing the Principal Site to be brought back into agricultural use following decommissioning.</p> <p>In the recent Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] decisions, the Secretary of State, determined that the cumulative loss of BMV land across these two schemes, together with West Burton and the Tillbridge Solar Project, and therefore the potential impact upon agricultural land and food production, will be minor and would not impact food security when these four solar NSIPs are considered both individually and cumulatively. The Secretary of State agreed with the ExA's recommendations on agricultural land use in considering the Gate Burton Energy Park. The ExA confirmed in its recommendation report at paragraph 3.11.114 that:</p> <p><i>“Whilst I appreciate the concerns of many IPs and the concerns expressed there is no meaningful assessment of the extent of lost production. Furthermore, given the national and regional figures identified by the Applicant in respect of cereal production even taking account of the whole site area there would be little discernible effect. This would be true even in a cumulative scenario on the basis of the figures produced by the Applicant.”</i></p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Food security	<p>Food Security and Food Imports Nearly half of what we eat in the UK comes from abroad, and two-thirds of that has in recent years come from the EU. The NFU confirm that UK self-sufficiency is only at 58%. With the recent war in Ukraine and the uncertainty of supply of core commodities such as wheat, there have been both supply issues and huge price fluctuations. This has refocused attention on food security in the UK and the need to protect productive farmland from development and long-term decline.</p> <p>"There are three cornerstones on which a prosperous farming sector must be built and which any government should use to underpin its farming policy. They are boosting productivity, protecting the environment, and managing volatility (source Minette Batters, NFU president). The country must "never take our food security for granted," she said.</p> <p>The United Kingdom Food Security Report states:- <i>"Food security is a complex and multi-faceted issue. It is structured around five principal 'themes', each addressing an important component of modern-day food security in the UK. They are as follows:</i></p> <ul style="list-style-type: none"> Global food availability, which describes supply and demand issues, trends and risk on a global scale, and how they may affect UK food supply; UK food supply, which looks at the UK's main sources of food at home and overseas; Supply chain resilience, which outlines the physical, economic, and human infrastructure that underlies the food supply chain, and that chain's vulnerabilities; Household-level food security, which deals with issues of affordability and access to food; and Food safety and consumer confidence, which details food crime and safety issues. <p>The report notes that the biggest medium to long term risk to the UK's domestic production comes from climate change and other environmental pressures like soil degradation, water quality and biodiversity. Wheat yields dropped by 40% in 2020 due to heavy rainfall and droughts at bad times in the growing</p>	<p>The 58% self-sufficient figure is based on economic value at the farm gate. Further detail is given in the most recent UK Food Security Report from Defra (2021) (See Appendix E) that notes that UK grain production is approximately equivalent to UK grain consumption (p96). The same is also true of UK production and consumption of meat, milk and eggs (p99). This therefore demonstrates that the UK is self-sufficient producing as much food as is consumed.</p> <p>As set out above, the site selection process carried out to identify the Principal Site for ground mounted solar, as described in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035], excluded, where possible, best and most versatile (BMV) agricultural land. In assessing the worst-case, the woodland proposed as part of the Scheme is considered a potential permanent loss of 0.92 ha of Grade 3a BMV agricultural land. Taking into account reductions to the Order limits following the Applicant's Change Request (granted by the ExA on 24 October 2024), 95.5% of the Principal Site is non-BMV land (this comprises 85.6% Grade 3b land and 9.9% non-agricultural land). There is not a significant permanent loss of BMV land as a result of the Scheme (only the change of 0.07% (0.92ha) of the Principal Site to woodland has been considered as permanent loss). Whilst not food production, woodland presents benefits provided by the Scheme in terms of biodiversity and provides future opportunities for farm diversification.</p> <p>Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] confirms that, in combination with all cumulative solar developments (namely Gate Burton Energy Park, Cottam Solar Project and West Burton Solar Project) that there is still not a significant cumulative effect on agricultural production as a result of the Scheme. The area of agricultural land that would be temporarily taken out of agricultural use across all four schemes would be 2.2% of agricultural land in Lincolnshire.</p> <p>The ExA in its recommendation report on Gate Burton Energy Park [EN010131], which the Secretary of State agreed with in his decision letter, confirmed at paragraph 3.11.114 that:</p> <p style="text-align: center;"><i>"Whilst I appreciate the concerns of many IPs and the concerns expressed there is no meaningful assessment of the extent of lost production."</i></p> <p>The Tillbridge Solar Project, through its site selection process sought to minimise impacts upon BMV land and through design iteration of the Scheme, has further minimised impacts. The siting of the Scheme on a limited extent of BMV land is justified and the loss of agricultural land and therefore potential food production would be temporary and reversible allowing the Principal Site to be brought back into agricultural use following decommissioning.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>season. This is an indicator of the effect that increasingly unreliable weather patterns may have on future production. When UK production is reduced, we are more dependent on imported commodities. The war in Ukraine has highlighted the vulnerabilities of such a strategy.</p>	<p>The 58% self-sufficient figure is based on economic value at the farm gate. Further detail is given in the most recent UK Food Security Report from Defra (2021) (See Appendix E) (Ref 1-22) that notes that UK grain production is approximately equivalent to UK grain consumption (p96). The same is also true of UK production and consumption of meat, milk and eggs (p99). This therefore demonstrates that the UK is self-sufficient producing as much food as is consumed.</p>
RR-165	Lincolnshire County Council	Impacts on soils in the Cable Route Corridor and management	<p>Food Security and Food Imports The relevant Environmental Statement chapter confirms that a soil survey has not yet been undertaken, but it will be captured as a requirement. <i>"Cable Route Corridor</i> <i>15.3.1 The Cable Route Corridor has not been subject to a soil survey to inform soil handling work for the cable construction. This survey will be conducted via a requirement of the DCO once the precise location of the cable trench path within the Cable Route Corridor is finalised. This approach to Cable Route Corridor surveying is preceded across the neighbouring solar farm projects and others including Sunnica Energy Farm. The soil survey can also record Agricultural Land Classification (ALC) grades for the cable trench path."</i> From viewing the maps included in the report it seems likely that some of the cable route will be BMV. However, irrespective of the land quality there will be issues of concern to farmers and landowners including:- Land drainage Weed burden Biosecurity for plant diseases Timeliness of soil stripping and storage These matters will need to be addressed satisfactory and appropriate mitigation measure to be put in place if the scheme is to proceed to an acceptable level.</p>	<p>In accordance with the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)], soils data to inform a detailed Soil Management Plan for the Cable Route Corridor will be collected prior to cabling work commencing, concentrating on the specific area of works rather than the unaffected wider cable route corridor. Up to date information on cropping and stocking of agricultural land would also be obtained from agricultural occupants at this stage with the aim of minimising disruption to farm operations through the timing of works. A detailed Soil Management Plan is to be produced in substantial accordance with the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)], as set out within Requirement 18 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>With regards to existing land drainage, Table 3-5 of the Framework CEMP [EN010142/APP/7.8(Rev01)] states that field drainage will be maintained during construction and if encountered it will be reinstated so far as reasonably practicable to a condition that is as effective as the previous condition on completion. The measures included within the Framework CEMP are secured by Requirement 12 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], which requires that the final CEMP(s) must be substantially in accordance with the Framework CEMP [EN010142/APP/7.8(Rev 01)].</p> <p>In relation to weed burden and biosecurity for plant diseases, as set out in paragraph 6.3.10 of the Framework LEMP [EN010142/APP/7.17(Rev02)], a Biosecurity Management Plan is to be developed which would set out procedures to ensure any imported building/landscaping materials are free from invasive non-native species (e.g. Schedule 9 species). In the event that any future infestations of invasive non-native species are identified during the development process, exclusion zones will be established around them and the ecology team contacted for advice as required.</p> <p>Furthermore, the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)] sets out measures for the appropriate timing of soil stripping and storage of soil.</p>
RR-165	Lincolnshire County Council	Impacts on soil	<p>Soil structure can be significantly damaged during the construction phase of the process, particularly on heavy clay</p>	<p>The Framework Soil Management Plan [EN010142/APP/7.12(Rev01)] includes measures to avoid soil structural damage by suspending soil</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Cumulative impacts in relation to agricultural land	<p>soils. There is inevitably a lot of trafficking of vehicles on the land to erect the panels and if this work is undertaken when soils are wet, there can be significant damage. Much of this damage can be remedied post construction, but not all and it is possible that long term drainage issues occur on the site due to the construction.</p> <p>During the construction phase many of the areas will affect soil and water issues. A basic Soil Management Plan should be established as part of the Construction Phase, to minimise the impact on soil resources.</p> <p>A separate soil management plan should be considered for the cable route to minimise the impact on soil structure, land drainage and ultimately soil quality. Guidance is available in published documents. There are a number of largescale Solar PV schemes in Lincolnshire, with others planned or proposed.</p>	<p>handling and trafficking when rain has wetted soil to a plastic consistence, as set out in paragraphs 4.2.2 (e), 4.2.3 and 5.2.1, to ensure that the Scheme minimises the impact on soil structure, land drainage and soil quality, A detailed Soil Management Plan, which will be substantially in accordance with the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)], will need to be approved by the Local Planning Authority (/Authorities) prior to construction, and this is secured by requirement 18 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>The appointed Principal Contractor during construction or the Operator during operation will be responsible for implementing the environmental mitigation measures documented in the Framework SMP [EN010142/APP/7.12(Rev01)], subject to grant of the DCO and as a contractual responsibility to the Applicant. The Applicant will ultimately be responsible for compliance with the requirements of the DCO. Depending on the final construction programme, there may be more than one detailed SMP prepared for the Scheme during construction, for example where different contractors are involved in different aspects of the Scheme. Therefore, there may be a separate SMP for the Cable Route Corridor, or this will otherwise be covered in the detailed SMP for the Scheme as a whole. This will be determined by the appointed Principal Contractor once the detailed construction programme is known.</p>
			<p>There are nine known solar project NSIP schemes; specifically in relation to impacts on agricultural land. The situation is a moving picture as new proposals come forward from time to time. Most of these sites are proposed on farmland.</p> <p>Lincolnshire is an agricultural area with substantial areas of land within the Best and Most Versatile category. Much of the non BMV land will be Grades 3b and some 4 but with very little Grade 5. A county-level assessment should consider scope for connection into the National Grid at the locations proposed by the registered NSIP solar projects above, and with specific consideration of agricultural land impacts.</p> <p>For a project of this scale there is an impact the project will tie up the land for up to 60 years, there will be an impact. The area is large locally and if the quantities of BMV are as stated then the impact will be reasonably small in BMV terms. Environmental Impact Assessments give guidance on the size and quality of Land Grade that is or can be affected by development proposals.</p> <p>The loss of such a large area of land would normally be considered as significant at District level, even though the use is 'temporary'. Any permanent loss of land due either to</p>	<p>Agricultural land quality was a key consideration in the Applicant's site selection process, as set out in paragraph 4.5.13 of Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and paragraph 3.5.5 of the Design and Access Statement [AS-031]</p> <p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into account reductions to the Order limits following the Applicant's Change Request (approved on 24 October 2024), within the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is provided within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>construction or through biodiversity designation may affect this assessment. A detailed ALC report has been commissioned and whilst some BMV land has been identified, over 90% of the site is found to be Grade 3b. Some areas of BMV have been excluded from development as part of the revised proposals. Further detail will be provided within the Council's Local impact Report which appraises the key steps in the process. At this stage the Council consider the ALC meets the criteria set out by British Society of Soil Science, though the Council cannot corroborate the soil samples themselves, only the calculations based on the data.</p>	<p>As set out in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. Following removal of solar PV panels, Solar Station and BESS, within these areas of the Principal Site the land will be able to be managed for arable production again following an extended period of low input grassland. All other infrastructure will be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a DEMP. In accordance with requirement 20 of Schedule 2 the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)] submitted as part of the Application. The only potential permanent removal of land from BMV agricultural use may result from proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However, a potential change of use of 0.9ha (0.07% of the Principal Site) of BMV land to proposed woodland is not considered to be significant and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60-year operational period has the potential to accrue improvement to soil function over a large area.</p> <p>A Framework SMP [EN010142/APP/7.12(Rev 01)] has been prepared and submitted with the Application and includes measures to ensure that soil quality and resource is protected during construction, operation and decommissioning. The construction and decommissioning of the Scheme will be managed through the implementation of a CEMP, DEMP and SMP, which will include measures to ensure that soil quality and resource is protected during construction and decommissioning. These are secured by requirements 12, 18 and 20 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev 03)] and will need to be substantially in accordance with the Framework CEMP [EN010142/APP/7.8(Rev 01)], Framework DEMP [EN010142/APP/7.10(Rev 01)] and Framework SMP [EN010142/APP/7.12(Rev 01)] and implemented in accordance with the approved details (which must be approved by the relevant local authority or authorities). These management measures will ensure that the soil resource is managed and protected to ensure that arable farming can resume following decommissioning of the Scheme.</p>
RR-165	Lincolnshire County Council	Legislation and policy	<p>Economic Regeneration/Growth Legislation and Planning Policy Identified within Appendix 14-1 (EN01042.APP/6.2). No national legislation has been identified to be of relevance to the assessment of socioeconomic effects. Although, National Policy Statements EN-1, EN-3 and EN-5 have been identified and are taken into account. The National Planning Policy Framework</p>	<p>Section 6.15 and Appendix E of the Planning Statement [AS-029] provide an assessment of the Scheme against the relevant policies in the Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Management Policies (2016) (Ref 1-19).</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Local community severance and PRow	<p>(NPPF) has also been considered as it is still relevant when considering the determination of DCOs.</p> <p>Relevant Local Planning Policy has been identified within the Central Lincolnshire Adopted Local Plan (2023), Adopted Bassetlaw District Core Strategy and Development Management Policies Development Plan Documents (2011), Draft Bassetlaw Local Plan Main Modifications (2023) and the following Neighbouring Plans – Corringham, Glentworth, Hemswell and Harpswell, Hemswell Cliff, Sturton by Stow and Stow, Rampton and Woodbeck and Treswell and Cottam. No reference has been made to the Council's Mineral and Waste Local Plan.</p> <p>Local guidance including the D2N2 LEP Recovery and Growth Strategy (2021), Protecting, Progressing, Prospering: Greater Lincolnshire Local Enterprise Partnership (LEP) Plan for Growth (2021), Greater Lincolnshire Energy Strategy (2019), and the West Lindsey Visitor Economy Strategy and Action Plan (2022) have also been considered.</p> <p>Local community severance and PRow</p> <p>Principle Site – six communities that lie in close proximity to the site have been identified (closest 700m), PRow that are located within and in close proximity (within 500m) to the principle site have also been identified.</p> <p>Cable Route Corridor – five communities identified as lying within 1km of the proposed cable route corridor (closest 200m), twelve PRow and three claimed PRow that are within or run across the cable route, there are a further eight PRow and seven claimed PRow that are located within the 500m study area</p> <p>Permissive Paths</p> <p>Two new permissive paths are proposed as part of the scheme within the principle site. A 1.5km stretch, joining Northlands Road to the south-west of the Principal Site; and A 2km stretch passing through to Kexby Road to the south</p> <p>Local Community Severance</p> <p>No permanent closures to PRow are expected during the construction (or operation or decommissioning phases) of the Scheme. During the construction period, PRow will be managed with a banksman (or similar).</p> <p>As all PRow would be kept open at all times such that journeys along these remain possible, the magnitude of impacts upon both users of PRow and local community severance is assessed to be very low. The sensitivity of the receptors is assessed to be medium, given that the PRow are of medium</p>	The Applicant notes this comment.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>level importance, and there is some potential for local PRow to be substituted for other routes. Given this, the effect of the Scheme on PRowS and local community severance is assessed to be negligible (not significant).</p> <p>Principal Site – Local Community Severance and PRow Any PRowS located within the Order limits that are required to be temporarily managed will be open as normal during the operational phase. There will therefore be no effect on local community severance or users of PRow arising from the Scheme. The addition of the new permissive pathways results in a minor beneficial (not significant) effect.</p> <p>Local Community Severance and PRow Most PRow within the Order limits would be unaffected during the decommissioning phase and while there could be temporary diversions there would be no permanent closures. The new permissive pathways that would be in place for the lifetime of the Scheme may be removed following decommissioning if requested by the relevant landowner(s). All other PRow will revert back to the original PRow network following decommissioning.</p> <p>The sensitivity of the receptors is assessed to be medium, given that the PRow are of medium level importance, and there is some potential for local PRow to be substituted for other routes should there be disruption from the Scheme. Given this, the effect of the Scheme on PRowS and local community severance is assessed to be negligible (not significant).</p> <p>The Council will give careful consideration to the proposals for PRowS and any claimed paths and provide any necessary further details on this in the LIR.</p>	
RR-165	Lincolnshire County Council	Socio-economic and land use effects and mitigation	<p>Additional Mitigation and Enhancements The applicant concludes that no additional mitigation is required with respect to socio-economic and land use effects arising from the Scheme.</p> <p>In terms of enhancements, a framework skills, supply chain and employment plan (SSCEP) has been submitted alongside the DCO application. This has been prepared to maximise and pro-actively expand the economic benefits of the scheme for the local community. The potential opportunities identified within the SSCEP include; the consideration of requiring contractors to provide training and apprenticeship opportunities; the potential to provide a programme of activities to promote STEM education and careers; undergoing measures to promote local</p>	The Applicant notes this comment.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Mental and physical health	<p>uptake of jobs generated by the scheme including the requirement for contractors to promote local employment and; working with local partners to communicate purchasing and contracting opportunities.</p> <p>The approval of the detailed SSCEP by the relevant planning authority and its implementation is secured by a requirement of the DCO.</p> <p>Public Health Public Health comments have focussed on the Environmental Impact Assessment (EIA) Scoping Report that informed the Environmental Statement, particularly the human health chapter. These comments are notwithstanding any implications should the development be reducing availability of productive, high quality, farmland that is currently available for growing food to sustain the nation.</p> <p>It is important that the cumulative effects of this development and others in the locality, county, and region are considered and that mental health effects, as well as physical health effects, are reflected.</p> <p>The Council welcomes the dedicated human health chapter, which draws together all potential negative and positive human health impacts (including from other chapters such as landscape and visual amenity, noise, and air quality) into one place, along with proposed mitigation measures. But it should also highlight where positive enhancements can be made should the development go ahead. The Council preference is that a comprehensive health impact assessment (HIA) is conducted with public and stakeholder engagement and is provided for the commencement of the examination for consideration by the Examining Authority.</p> <p>To establish the baseline, the applicant should refer to the Lincolnshire Joint Strategic Needs Assessment (JSNA) and the updated Joint Health and Wellbeing Strategy for Lincolnshire (2024), rather than the 2018 version that is referenced. Information contained on Fingertips and Local Health websites will also be helpful. Human health should be assessed using evidence (from published research and best practice guidance, etc.) wherever possible as opposed to entirely subjective, professional judgement. It is recognised that many likely and potentially significant issues associated with the proposed development will be based on a preliminary judgment of significance.</p>	<p>The assessment of effects on human health has been reported within Chapter 11: Human Health of the Environmental Statement [APP-042], rather than a standalone Health Impact Assessment (HIA). This approach was agreed with PINS via the EIA Scoping process (refer to Appendix 1-1: EIA Scoping Report [APP-051] and Appendix 1-2: EIA Scoping Opinion [APP-052]). The assessment follows the guidance set out within NHS England's Healthy Urban Development Unit's (HUDU) Rapid Health Impact Assessment (HIA) Toolkit 2019 (Ref 1-23) and the Institute of Environmental Management and Assessment (IEMA) guidance "<i>Determining Significance For Human Health In Environmental Impact Assessment (Ref 1-24)</i>". It is considered that the preparation of a standalone HIA would not change the conclusions of the assessment presented within Chapter 11: Human Health of the Environmental Statement [APP-042].</p> <p>Chapter 11: Human Health of the Environmental Statement [APP-042] assesses potential effects of the Scheme on health and wellbeing of local residents. The assessment takes a holistic approach to health and considers a wide range of health determinants which are relevant to quality of life and amenity. The assessment considers elements of the Scheme which could affect mental health (for example changes in landscape and visual amenity, noise, access to open space and employment) as well as physical health (for example associated with air pollution and access to healthcare facilities). No significant adverse effects are identified with regards to human health.</p> <p>In terms of disruption during the construction, operational and decommissioning phases and in recognition of the potential for impacts on mental health that could arise from activities on site, and surroundings, there are measures set out in the Framework CEMP [EN010142/APP/7.8(Rev 01)], Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] to reduce or avoid human health and wellbeing related impacts du. These will inform separate detailed CEMP, OEMP and DEMP that will need to be approved by the Local Planning Authority (/Authorities) prior to construction, and this is secured by requirements 12, 13 and 20 respectively in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], each of which require the relevant detailed management plan(s) to be substantially in accordance with the framework plans submitted as part of the DCO Application.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>Additionally, further details with respect to specific embedded mitigation measures relevant to minimising amenity impacts associated with traffic, noise and air quality are set out in Chapter 6: Air Quality of the Environmental Statement [APP-037], Chapter 13: Noise and Vibration of the Environmental Statement [AS-006] and Chapter 16: Transport and Access of the Environmental Statement [APP-047].</p> <p>The Applicant will work with the Local Authorities to ensure that the local community is affected as little as possible. This could be (for example) by targeting contractors who will make social value commitments during construction.</p> <p>In addition, Chapter 11: Human Health of the Environmental Statement [APP-042] finds beneficial impacts on employment and income, prioritisation of walking and cycling routes (through new permissive paths) and climate change (through a substantial emissions reduction relative to the without-Scheme baseline) during operation. These impacts will lead to positive effects on human health, including both physical and mental health.</p> <p><u>Cumulative Effects</u> The assessment of cumulative impacts of the Scheme with other developments in the locality is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. The Scheme and other solar DCOs (namely Gate Burton Energy Park, Cottam Solar Project and West Burton Solar Project) have worked collaboratively during design development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures. Only significant cumulative effects relevant to the assessment of effects on human health relate to effects arising from landscape and visual change.</p> <p>Based on receptors experiencing significant adverse cumulative effects, a low number of residents will be affected. Over the course of the operational phase, people will become used to the change in the landscape and visual amenity and it will therefore have less of an impact on mental health and wellbeing. Overall, the likely effect on human health arising from cumulative impacts on landscape and visual amenity during the operational phase of the Scheme will not be significant as set out in Chapter 11: Human Health of the Environmental Statement [APP-042].</p> <p><u>Lincolnshire Joint Strategic Needs Assessment (JSNA) (Ref 1-25) and the updated Joint Health and Wellbeing Strategy for Lincolnshire (2024) (Ref 1-26)</u></p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Health impacts of EMFs and landscape and visual effects	<p>The Council considers the Environmental Statement must include an assessment and mitigation for: Potential health impacts associated with electromagnetic fields around substations, powerlines, and cables. It needs to be demonstrated that potential actual exposure to radiation (which includes electromagnetic fields) will comply with exposure limits developed by the International Commission on Non-Ionizing Radiation Protection. There does not seem to be any reference on potential exposure to radiation being included in the Environmental Statement which needs to be updated to capture this.</p>	<p>With regards to the JSNA (Ref 1-25) and the updated Joint Health and Wellbeing Strategy for Lincolnshire (2024) (Ref 1-26), the Applicant acknowledges these policies and can demonstrate alignment with them. The Lincolnshire JSNA and the Joint Health and Wellbeing Strategy share the same aims for the area of Lincolnshire, which include:</p> <ul style="list-style-type: none"> • <i>“Taking collective action on health and wellbeing across a range of organisations”</i> and • <i>“Tackling inequalities and equity of service provision to meet the population needs”</i> <p>The policies also share priority areas for health in Lincolnshire, including mental health and dementia, and physical activity.</p> <p>With reference to these aims and priorities, Chapter 11: Human Health of the Environmental Statement [APP-042] aligns with this through the assessment of the Scheme on human health and wellbeing receptors. The assessment takes a holistic approach to health and considers a wide range of health determinants which are relevant to quality of life and amenity. No significant adverse effects are identified with regards to human health, which aligns with the stated aims of the JSNA and the Joint Health and Wellbeing Strategy to improve health outcomes.</p> <p>In addition, and as noted above, Chapter 11 finds beneficial impacts on employment and income, prioritisation of walking and cycling routes (through new permissive paths) and climate change during operation, which will lead to positive effects on human health, including both physical and mental health. This positive effect provides alignment with the aims and priorities of the JSNA and the Joint Health and Wellbeing Strategy through improving the provision of service and providing beneficial impacts on the priority areas of mental health and physical activity. In summary, the assessment of human health and wellbeing effects set out in Chapter 11: Human Health of the Environmental Statement [APP-042] would not be expected to change as a result of incorporating these policies.</p> <p>Section 17.9 of Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048] provides an assessment of the potential impacts associated with Electric and Electro-Magnetic Fields (EMF), with reference to the International Commission on Non-Ionizing Radiation Protection (ICNIRP) exposure guidelines for electro-magnetic fields (Ref 1-27) and National Grid’s guidance on undergrounding high voltage electricity transmission lines (Ref 1-28). This explains that cables would be installed at a minimum of 10 m from the façade of any residential dwelling, as confirmed in the Outline Design Principles Statement [AS-058]. This design parameter is secured by requirement 5 in Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)] which requires that the detailed design is in accordance with the outline design principles incorporated into the Outline Design Principles Statement</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Battery safety	Protection from any thermal outbreak that could be caused by faulty or overloaded on-site battery storage pending transfer to the National Grid.	<p>[AS-058]. Using National Grid's known levels of electro-magnetic field generation, the assessment considers that as a worst case a residential receptor would need to be within 5 m of the centreline of the high voltage cabling, and for the cable to be overlapped by other electricity infrastructure, for potentially significant effects to occur on human receptors. Therefore, no significant adverse effects to residential receptors from EMFs are predicted to occur. Section 17.9 of Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048] also states that the presence of the public using PRowS either directly above or adjacent to underground cables associated with the Scheme would be transient and it is considered that the level of exposure to users of PRow would be similar to that associated with general household appliances (and noticeably less than associated with the exposure when using certain appliances, e.g. a vacuum cleaner). Therefore, no significant effects to users of PRowS are predicted to occur.</p>
RR-165	Lincolnshire County Council	Battery safety	Protection from any thermal outbreak that could be caused by faulty or overloaded on-site battery storage pending transfer to the National Grid.	<p>With regards to a thermal outbreak, the Framework BSMP [APP-225] details risk assessment tools that will be utilised together with detailed consequence modelling to provide a comprehensive site operations and emergency response safety audit at the detailed design stage. Risk assessment tools and detailed site-specific consequence modelling will provide a comprehensive site operations and emergency response safety audit to ensure the highest levels of safety are secured during the construction, operational and decommissioning phases of the Scheme. The battery system mitigation measures adopted in a final Battery Safety Management Plan, will reflect the latest BESS safety codes and standards applicable at that stage. Mitigation measures will be discussed and coordinated with the Lincolnshire Fire and Rescue Service (LFR). A final Battery Safety Management Plan will be prepared in substantial accordance with the Framework BSMP [APP-225]. This is secured by Schedule 2, Requirement 6 of the draft DCO [EN010142/APP/3.1(Rev03)].</p>
RR-165	Lincolnshire County Council	Visual effects	Scope for significant adverse visual effects resulting from the introduction of solar panels and associated infrastructure. The landscape and visual amenity chapter should ensure that both the potential effects on mental health and wellbeing because of any reduction in landscape amenity and the potential sense of enclosure are specifically referenced, and that this includes reference to how potential impacts across the range of identified sensitive receptors could change over time (i.e. during the different stages of the development and as landscaping matures) and during worst case periods.	<p>Chapter 12: Landscape and Visual Amenity within the Environmental Statement [APP-043] assesses the landscape effects of the Scheme during construction, operation and decommissioning. Significant landscape effects will arise during construction for LLCA 2B, Lincoln Cliff-Harpswell. The sensitivity of this LLCA is high due to the collective value of heritage assets, a PRow and permissive access within a 'parkland' landscape. During construction, there is potential for these perceptual qualities, particularly views into the wider landscape and from accessible elements of the designated heritage landscape. Significant visual effects during construction and in operation year 1 in relation to the Principal Site will also occur. This includes views from public footpaths and the surrounding local highway network but the absences of PRow in proximity to the Principal Site contributes to there being relatively fewer significant visual effects overall.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-165	Lincolnshire County Council	Opportunities to improve PRow	It is noted that the network of public rights of way (PROWs) and bridleways falls outside of the principal site and would, therefore, be unaffected in the long term. However, temporary impacts and re-routing for construction and cable laying (along the entire cable corridor route) must be considered. If the development goes ahead, opportunities to improve connections should be explored, including potential for a long-distance route along the cable corridor to Cottam. This could also act as a corridor for nature to support biodiversity.	<p>At year 15, following the implementation of mitigation planting, significant visual effects will be removed in the majority of cases. This is with the exception of 3 viewpoints (VP7, VP9 and VP13). VP13 is from a public footpath, Millfield, Hemswell.</p> <p>Significant visual effects at Operation Year 15 (summer) will largely arise for receptors with open, elevated views from the Cliff where the open, elevated location means that mitigation through screen planting is difficult to achieve.</p> <p>In view of the above, Chapter 12: Landscape and Visual Amenity within the Environmental Statement [APP-043] has assessed the effects of the Scheme upon landscape visual amenity. This needs to be read alongside Chapter 11: Human Health of the Environmental Statement [APP-042], which acknowledges that landscape and visual amenity effects may have an impact on mental health and wellbeing. Based on receptors experiencing significant adverse effects, a low number of residents will be affected. Over the course of the operational phase, people will become used to the change in the landscape and visual amenity and it will therefore have less of an impact on mental health and wellbeing. Overall, the likely effect on human health arising from impacts on landscape and visual amenity during the operational phase of the Scheme will not be significant.</p> <p>Requirement 4 of the draft DCO [EN010142/APP/3.1(Rev03)] requires the establishment of a community liaison group prior to the commencement of development whose terms of reference must be approved by the relevant planning authority. The community liaison group will provide a means for the Applicant to collaborate and communicate with local residents. This will help to alleviate concerns about each phase of the Scheme, thereby supporting health and well-being. The draft DCO [EN010142/APP/3.1(Rev03)] also contains a number of other control mechanisms that will ensure that the Scheme is constructed, operated and decommissioned in a reasonable manner to reduce impacts upon residential amenity and therefore health and well-being. This relates to requirements 12 (CEMP), 13 (OEMP), 14 (CTMP), 15 (operational noise), 16 (PRow diversions) and 19 (decommissioning and restoration).</p> <p>A PRow Impact Assessment has been completed as part section 16.8 of Chapter 16: Transport and Access of the Environmental Statement [APP-047] with no significant effects arising. No permanent closures or diversions of PRowS will take place and where temporary closures and diversions are required to facilitate construction, this will be managed in accordance with a PRow Management Plan to be secured by requirement 16 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. This requirement of the draft DCO provides that the final PRow Management Plan will need to be substantially in accordance with the Framework Public Rights of Way Management</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>Plan [APP-228] and no part of the authorised development can take place until the PRow Management Plan has been submitted to and approved by the relevant planning authority.</p> <p>The Applicant has acknowledged that NPS EN-1 (Ref 1-17) (paragraph 2.10.44) seeks Applicants to consider and maximise opportunities to facilitate enhancements to PRowS. The Scheme includes the provision of two permissive paths within the Principal Site that will link with existing connections. Given the absence of PRowS within the Principal Site this will provide a benefit to the local community through providing additional recreational routes and connections to PRowS beyond the Principal Site.</p> <p>The Scheme will not have a significant effect on PRowS and temporary diversions and closures will be carefully managed. The NPPF and associated NPPG is important and relevant in decision making. Planning obligations must only be sought where they are necessary to make development acceptable in planning terms, directly related to the development and fairly and reasonably related in scale and kind to the development. There is no need to mitigate against impacts on PRowS within the cable route corridor other than managing temporary closures and diversion in accordance with the Framework Public Rights of Way Management Plan [APP-228] and the approved PRow Management Plan. It would not be reasonable for the Scheme to deliver a long-distance route along the Cable Route Corridor with this failing to be fairly and reasonably related in scale to the impacts associated with the development given that works within the Cable Route Corridor are temporary.</p>
RR-165	Lincolnshire County Council	Draft DCO	<p>Draft Development Consent Order</p> <p>At this stage the Council reserves its position on the relevant parts of the draft DCO including the proposed requirements which are likely to be needed to be amended or added to at the examination progresses. The Council wishes to participate in any Issue Specific Hearing in relation to the drafting of the DCO.</p>	<p>The Applicant notes this comment.</p>
RR-165	Lincolnshire County Council	Cumulative impacts	<p>Cumulative Impacts</p> <p>The Council wishes to draw to the attention of the Planning Inspectorate and the Examining Authority the unprecedented number of DCO projects that are currently on-going in Lincolnshire which will result in three other examinations taking place in the County at the same time as this one. In addition a second wave of potential DCO projects are now commencing their pre-application stage. LCC wishes to be fully involved in all these examinations but has only limited resources and personnel and therefore requests that careful and sensitive attention is given to the examination timetables to ensure that hearings and deadline dates take into account those of other project that will be under examination at the same time.</p>	<p>The Applicant has considered cumulative effects of the Tillbridge Solar Project during construction, operation and decommissioning in combination with other developments identified as part of the cumulative assessment within Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049].</p> <p>The Application is also supported by a Joint Report on Interrelationships between Nationally Significant Infrastructure Projects [APP-215 to APP-217] in conjunction with the Gate Burton Energy Project, the Cottam Solar Project and the West Burton Solar Project. The intention is that this will be reviewed throughout the examination to ensure that all relevant NSIP projects are captured and</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>In addition LCC request assurance as to how the ExA will take into consideration further NSIPs and associated details as they emerge in the geographical area of this application. As outlined above a number of projects have commenced non-statutory consultation since the applicant completed their Environmental Statement and therefore these have not currently been assessed in the applicants cumulative assessment.</p> <p>LCC requests that this ExA adopts a mechanism similar to that adopted by the ExAs for the solar projects in western Lincolnshire where each applicant was required to produce a inter- relationship report at the start of their examination and then this is subsequently updated at each deadline during the examination. This report captures information from emerging NSIPs and as details about the projects becomes available requires the applicant to undertake further assessments to assess how these impact on the cumulative impact assessments that have been prepared in the submitted ES. This will provide the ExA, the host authorities and others an opportunity consider the potential cumulative impacts from all these projects as they emerge and the necessary mitigation measures that will be needed.</p>	<p>that the report remains up to date with respect to the status of these and therefore cumulative effects.</p>
RR-165	Lincolnshire County Council	Community benefits	<p>Community Benefits Package LCC expects appropriate energy related benefits to the local communities and economy to be provided through a Community Benefits package and the Council would welcome the opportunity to explore appropriate opportunities during the examination.</p> <p>LCC looks forward to working with the applicant and the Planning Inspectorate as the project progresses through the DCO process and welcomes the opportunity to comment on matters of detail throughout the examination.</p>	<p>The Applicant has considered a community benefit package as part of the Scheme. It is recognised that projects like the Tillbridge Solar Project can be disruptive to those living and working closest to it. The Applicant has engaged with both the Lincolnshire and Nottinghamshire community foundations and, should the Scheme receive development consent, the Applicant would provide a community benefit package, and those discussions would be had outside of the DCO process.</p> <p>The Scheme stands to contribute towards the local economy and supply chain, this includes through the provision of jobs (both directly and indirectly) in the local area. The Applicant has considered a series of measures designed to maximise such local benefits. Further detail is provided in the Framework Skills, Supply Chain and Employment Plan (FSSCEP) [APP-232].</p>
RR-328	West Lindsey District Council	Summary of Relevant Representation	<p>1.1. This submission is the Relevant Representation (RR) of West Lindsey District Council (WLDC) in relation to the Tillbridge Solar Project (TSP), submitted for determination for development consent, in accordance with the Planning Act 2008 (PA2008) as a Nationally Significant Infrastructure Project (NSIP).</p> <p>1.2. WLDC is the host local authority for the project. The 'order limits' of the Development Consent Order (DCO) includes the</p>	<p>The Applicant notes this comment.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>development of land within the administration boundary of WLDC; which includes the majority of the project aside from a section of the cable connecting the project with it National Grid 'point of connection' at Cottam to the west of the District (within Bassetlaw District Council).</p> <p>1.3. In accordance with section 102(1)(C) of the PA2008, WLDC automatically qualifies as an 'interested party' (IP) for the purpose of the examination of the project.</p> <p>1.4. In its capacity as an 'interested party', WLDC submits this RR in accordance with sections 56 and 102(4) of the PA2008. Scope and context of this Relevant Representation</p> <p>1.5. This RR has been prepared with regard to the "Nationally Significant Infrastructure Projects – Advice Note Two: The role of local authorities in the development consent process" (February 2015) ("Advice Note Two"), published by the Planning Inspectorate.</p> <p>1.6. Advice Note 2 confirms that host and neighbouring authorities have an important role in the PA2008 process and will provide an important local perspective. It encourages local authorities to complete a relevant representation and submit to the Planning Inspectorate. This enables the Examining Authority (ExA) to consider the views of the local authority when carrying out its initial assessment of principal issues in advance of the publication of the draft examination timetable (Rule 6 letter).</p> <p>1.7. Advice Note 2 states that a RR should include a summary of what the local authority agrees and/or disagrees with in the application, what they consider the main issues to be, and their impact. Furthermore, it states that IPs will have the opportunity to submit a written representation during the examination which can elaborate on the matters raised in a relevant representation.</p> <p>1.8. In this RR, WLDC sets out what it currently identifies as the key issues relating to the project, based upon an initial review of the extensive DCO application material.</p> <p>F</p> <p>1.9. WLDC also confirms in this RR that it intends to submit a Written Representation (WR) in addition to its Local Impact Report (LIR). Both these documents will provide a more detailed case following the completion of a full technical assessment and the resolution of WLDC council members. They will expand upon the importance of each issue, and will assess them against the relevant policy framework to provide a</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>position on the overall planning balance (acceptability) of the project.</p> <p>2. Core issues for consideration Introduction</p> <p>2.1. WLDC will provide detailed comments on the Tillbridge Solar Project (TSP) in its Local Impact Report (LIR) and Written Representation (WR). This Relevant Representation (RR) is therefore submitted without prejudice to the view that may be expressed in those documents.</p> <p>2.2. The issues that WLDC consider and foresee to be of particular importance during the examination of the DCO application at this stage are set out below.</p>	
RR-328	West Lindsey District Council	Policy framework and decision making	<p>Policy framework and decision making</p> <p>2.3. WLDC will set out its position on the compliance of the application with the PA2008 for the purpose of decision making.</p> <p>2.4. The assessment and planning balance will be carried out with regard to matters that include: Primary and secondary legislation Relevant National Policy Statements; National Planning Policy Framework; The statutory development plan framework (Central Lincolnshire Local Plan 2023); National Infrastructure Planning Guidance Representations from other parties (including the applicant).</p> <p>2.5. WLDC reserve the right to raise further matter relating to compliance with any primary or secondary legislation, and important and relevant policy, as it sees fit during the examination process.</p>	The Applicant notes this comment.
RR-328	West Lindsey District Council	Cumulative impacts	<p>Cumulative impacts</p> <p>2.6. The cumulative impacts of the Tillbridge Solar Project with other solar energy generating station Nationally Significant Infrastructure Projects (NSIP) comprising the Gate Burton Energy Park, Cottam Solar Project and West Burton Solar Project will be a key concern for WLDC. The potential impact of all four projects on the environment, socio-economic and communities of West Lindsey will be a matter that WLDC expects to be examined rigorously.</p> <p>2.7. At the date of publication of this RR, the status of each of these projects is as follows: Gate Burton Energy Park (531MW) (Order Limits: 824ha approx.) – Consented</p>	<p>The Applicant notes these comments.</p> <p>It should be noted that the Application submission includes an updated version of the Joint Report on Interrelationships between NSIPs [APP-215 to APP-217]. This will be further updated during examination to ensure that any new NSIPs are considered should these emerge or that the stage of applications already included in the report is updated. The Applicant notes that since the date of the West Lindsey Relevant Representation, the Cottam Solar Project has now also been consented, on 5 September 2024.</p> <p>An assessment of cumulative effects is also presented within Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. This outlines cumulative effects with regards to landscape and visual amenity, loss of agricultural land and food production, noise and vibration, air quality, construction traffic, ecology,</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>Cottam Solar Project (600MW) (Order Limits: 1450ha approx.) – Decision stage (with SoS) with decision due no later than 5th September 2024</p> <p>West Burton Solar Project (480MW) (Order Limits: 886ha approx.) - Decision stage (with SoS) - with decision due no later than 8th November 2024</p> <p>2.8. It is therefore clear that a significant amount of solar farm development is being proposed within the West Lindsey District, with a consent recently granted and two further large scale projects expected to be determined prior to the commencement of, or during the examination of the Tillbridge Solar Project. A further NSIP project, One Earth, is another solar generating station with a secured grid connection agreement with National Grid to allow the export of up to 740MW. The One Earth project is anticipated to be submitted 'winter' 2024 which, if adhered to, could result in the overlapping of its examination with the Tillbridge Solar Project.</p> <p>2.9. As the fourth solar NSIP project to be examined, it is therefore clear that the cumulative impacts of Tillbridge Solar Park with the preceding three projects alongside the emerging projects, will be a key issue for WLDC during examination. The procedural manner in which NSIPs are examined under the PA2008 does not lend itself to an effective consideration of projects located in close proximity to each other. Each application is required to be considered independent of each other, with the examination of each application being on its own individual merits. WLDC has been frustrated by this approach, as none of the three examinations to date have considered the projects side by side as 'equals' to determine the like environmental impacts and how, in the event that development consent is granted, how they can be mitigated in a co-ordinated and consistent manner.</p> <p>2.10. WLDC anticipates that the examination of the Tillbridge Solar Project will include the careful and thorough consideration of the impacts of the project as an addition to the three projects that precede it. Emerging projects such as One Earth Solar Farm, should also form part of the examination of cumulative impacts to the extent that information of that project is known. WLDC's view is that all current environmental information must be before a decision maker at the point a decision is made, and the emergence of the One Earth Solar Park project should be accounted for in cumulative assessments.</p> <p>2.11. WLDC is also conscious that the decision made on Gate Burton Energy Park becomes an 'important and relevant' matter pursuant to section 104 of the PA2008; as will the decisions on</p>	<p>and cultural heritage, amongst other environmental effects. Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] also considers cumulative effects with One Earth Solar Farm.</p> <p>The Design and Access Statement [AS-031] describes how the design evolution of the Scheme has been coordinated with the other solar NSIPs (Gate Burton Energy Park, Cottam Solar Project and West Burton Solar Project), including the agreement of a shared cable route corridor and maintaining buffers between the Principal Site of the Scheme and the Cottam Solar Project.</p> <p>The Applicant is aware of the recent decision in <i>Finch</i> and is confident it has adequately assessed the likely significant effects of the Scheme having regard to those direct and indirect effects with an inevitable causal link to the Scheme, where there is sufficient available information or an agreed best practice methodology available to assess the likely environmental effect.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>the Cottam Solar Project and West Burton Solar Project, which will be made before the close of the Tillbridge Solar Park. As a consequence the theoretical cumulative scenario will become more certain during the examination and WLDC will be seeking to make representations on the implications in terms of the acceptability of the Tillbridge Solar Park.</p> <p>2.12. The increasing number of solar NSIPs being proposed within the West Lindsey District is a primary issue for concern for WLDC. The likely impacts will relate to a range of construction, operational and decommissioning impacts that include (inter alia): Design of projects (layout and relationship with each other) Landscape character change Visual effects Loss of agricultural land ? Socio-economic impacts (upon agricultural sector) Noise and vibration Air Quality Construction traffic Ecology (inc. Biodiversity Net Gain) Cultural heritage Delivery of mitigation for each project Residential amenity Deliver of a co-ordinated approach to construction with other projects</p> <p>2.13. WLDC will also wish to examine the relevance of the recent judgement of the Supreme Court in R (on the application of Finch on behalf of the Weald Action Group) v Surrey County Council and others [2024] UKSC20 and the extent to which it is relevant to the Tillbridge Solar Project. Such matters will include the extent to which the 'direct' and 'indirect' significant effects of the project on the climate have been considered.</p> <p>2.14. WLDC will set out its position regarding cumulative effects in more detail within its LIR and Written Representation</p>	
RR-328	West Lindsey District Council	Project specific impacts	<p>Project specific impacts</p> <p>2.15. WLDC will set out its full case and fully explore the impacts of the Tillbridge Solar Project in its LIR and Written Representation.</p> <p>2.16. Without prejudice to matters that are identified following a detailed assessment of the application, WLDC expect the following impacts to be scrutinised during the examination: Compliance with legislation; Policy compliance and planning balance;</p>	<p>The Applicant has undertaken an Environmental Impact Assessment (EIA) of the Scheme, which is reported within the Environmental Statement [APP-031 to APP-208] submitted with the Application. The Environmental Statement provides an assessment of the effects of the Scheme on sensitive environmental receptors and resources and outlines mitigation proposed to avoid, minimise, restore and offset any impacts of the Scheme. All mitigation proposed is also summarised within the Environmental Mitigation and Commitments Register [APP-209].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>Project design (inc. site selection and alternatives); Landscape character effects; Landscape visual effects; Land use and loss of agricultural land; Socio-economic impacts; Public amenity and recreation; Ecology and biodiversity (including Biodiversity Net Gain); Cultural heritage; Traffic and transport; Noise; Air Quality; Safety and human health; and Residential amenity.</p>	<p>The Applicant notes concerns raised regarding the need to deliver a joint co-ordinated approach to the construction of all four solar projects if each is consented. Each project will need to comply with the statutory provisions of its Order. This includes controls and management during all phases of the project through details to be approved by the relevant authority through the discharge of requirements. The requirements are set out in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p>
			<p>2.17. WLDC will provide its judgement on the acceptability of the Tillbridge Solar Project through a considered 'planning balance'. This will assess the benefits and disbenefits of the scheme against the relevant policy framework, to provide an overall conclusion.</p>	<p>In terms of the co-ordination of construction with the other projects, Appendix C of the Joint Report on Interrelationships between Nationally Significant Projects [APP-216] includes a copy of a Co-operation Agreement signed by each solar developer. This Co-operation Agreement requires the developers to cooperate with each other during examination and until the determination of each DCO application and to then agree and enter into a Further Cooperation Agreement. The Further Cooperation Agreement will be an agreement between the Parties in order to manage the interaction of the projects during the discharge of requirements, and the respective construction and operational phases of each project.</p>
			<p>2.18. WLDC also understands its role as part of the examination in terms of responding to written questions directed to them by the Examining Authority, providing written responses to documents submitted by others, attendance at Hearings (inc. the completion of any actions imposed) and to enter into a Statement of Common Ground with the applicant.</p>	<p>Whilst it is appreciated that this is a side agreement and does not form part of the DCO it demonstrates the Applicant's willingness to implement the projects should they all be consented in a co-ordinated manner to minimise impacts on the local communities.</p>
				<p>A work in progress Statement of Common Ground with West Lindsey District Council [EN010142/APP/9.8] has been submitted at Deadline 1 of the Examination.</p>
	West Lindsey District Council	Approach to mitigation	<p>Approach to mitigation</p> <p>2.19. Without prejudice to its conclusions on the acceptability of the application, WLDC consider the approach to delivering mitigation both for the project 'in solus' and cumulatively with other projects to be a key matter for examination.</p> <p>2.20. The approach the applicant takes to delivering mitigation through codes of control/management plans is a key matter for WLDC, and a thorough examination of the content of outline/draft documents to be delivered through DCO 'requirement(s)' is expected. In particular, the requirement for a joint, co-ordinated and consistent approach to project construction with other projects is considered to be essential.</p> <p>2.21. WLDC will seek to ensure all impacts on the environment and communities are mitigated and controlled. This extends beyond those impacts assessed as being 'significant' in terms of the Environmental Impact Assessment. WLDC expect the</p>	<p>The Applicant has incorporated embedded mitigation into the Scheme design in order to avoid, reduce and mitigate impacts on the environment as far as possible, as well as providing environmental enhancement in order to achieve a minimum of 10% BNG, along with providing other socio-economic benefits to the local area, as set out in the Design and Access Statement [AS-031] and section 5.3 of the Planning Statement [AS-029]. The Applicant has prepared a number of Framework management plans which include all of the mitigation measures proposed by the Scheme, and include:</p> <ul style="list-style-type: none"> • Outline Design Principles Statement [AS-058]; • Framework Construction Environmental Management Plan [EN010142/APP/7.8(Rev01)]; • Framework Operational Environmental Management Plan [EN010142/APP/7.9(Rev01)]; • Framework Decommissioning Environmental Management Plan [EN010142/APP/7.10(Rev01)];

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>applicant to produce well defined and committed codes of control/management plans that seek to minimise all impacts upon the environment and local communities.</p>	<ul style="list-style-type: none"> • Framework Construction Traffic Management Plan [EN010142/APP/7.11(Rev02)]; • Framework Soil Management Plan [EN010142/APP/7.12(Rev01)]; • Framework Battery Safety Management Plan [APP=225]; • Biodiversity Net Gain Report [AS-062]; • Framework Public Rights of Way Management Plan [APP-228]; • Framework Landscape and Ecological Management Plan [EN010142/APP/7.17(Rev02)]; and • Framework Skills, Supply Chain and Employment Plan [APP-232]. <p>These documents will inform detailed management plans, which will be iterated throughout the Examination process and ultimately need to be approved by the relevant Local Planning Authority prior to the relevant phase to which they relate. All works associated with the authorised development (the Scheme if consented) must be carried out in accordance with the detailed management plans. This is secured by a number of requirements in Schedule 2 of the draft DCO [EN010142/APP/3.1Rev03] which relate to the preparation and approval of the detailed management plans, in general accordance with the framework management plans.</p> <p>In terms of cumulative mitigation, every other solar DCO project within Lincolnshire has also prepared similar management plans, which will inform detailed management plans to be secured by requirements within their DCOs. The Applicant has worked closely with these other projects during the design of the Scheme to ensure that impacts are minimised where possible, and the Applicant has prepared a Joint Report on Interrelationships between Nationally Significant Infrastructure Projects [APP-215 to APP-217] in conjunction with the Gate Burton Energy Project, the Cottam Solar Project and the West Burton Solar Project which will be reviewed throughout the examination to ensure that all relevant NSIP projects are captured and that the report remains up to date with respect to the status of these and therefore cumulative effects.</p>
RR-328	West Lindsey District Council	Draft DCO	<p>Draft Development Consent Order</p> <p>2.22. WLDC will provide detailed comments on the draft DCO, particularly with regard to:</p> <ul style="list-style-type: none"> • The scope of the authorised development; • The procedure for securing subsequent approvals (e.g. approval of information pursuant to a DCO 'requirement'); • The drafting of DCO 'requirements'. <p>2.23. WLDC will be seeking, where appropriate, a consistent approach to the drafting and document scope between the Tillbridge Solar Project and the other nearby projects. Inconsistencies in approach will not assist with the efficient</p>	<p>The Applicant notes this comment. The draft DCO submitted with the Application was largely adapted to align with the draft DCO for Gate Burton, in order to maintain a consistency in approach for bodies in the area. The separate NSIP solar projects have also, where possible, sought to align discussions with bodies in respect of the negotiation of protective provisions to ensure an aligned approach.</p> <p>The Applicant has considered the revisions to relevant determinations within the made Gate Burton Energy Park Order and Cottam Solar Project Order. At this stage, the Applicant considers the timeframes within the draft DCO as submitted with the Application are appropriate, and has not proposed any amendments (an updated version of the draft</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>consideration of subsequent details when submitted, especially where impacts 'in common' (that is similar impact that could occur at the same time for different projects) are dealt with differently by individual projects.</p> <p>2.24. The procedure proposed for the approval of subsequent details is also a matter of significant interest for WLDC. The NSIP in its own right is a complex EIA project, where a number of details are proposed for approval post-consent following a further detailed design process by the applicant. Due to the significant nature of the environmental impacts to which these subsequent details relate, the requirement to consult technical consultees (including statutory bodies) to inform decision making and that the importance of mitigating impacts for local communities results in WLDC requiring sufficient timescales within which to determine them.</p> <p>2.25. Recognising that WLDC may be in a position where significant amounts of information relating to four or more different projects could be submitted for approval concurrently, it is clear that enabling reasonable time to assess, consult and determine complex details in the public interest is essential.</p>	<p>DCO [EN010142/APP/3.1(Rev 03)] is being submitted at Deadline 1 with amendments in response to other matters raised by WLDC).</p>
RR-328	West Lindsey District Council	Summary of Relevant Representation	<p>3. Summary</p> <p>3.1. WLDC, as the host authority and defined Interested Party for the Tillbridge Solar Project application, will take a full and active role in the examination phase.</p> <p>3.2. The circumstances in which WLDC is carrying out its duties is unique due to the scale and number of solar generating station NSIP projects that are being considered for concurrently. The projects all will result in significant adverse impacts on the environments and residential amenity in themselves and cumulatively with other projects where effects will be experience of a wide geographical area. WLDC will therefore be engaging with the examination with the cumulative impacts being a primary consideration and one which should be carefully considered as a reason to find an individual project unacceptable in planning terms.</p> <p>3.3. WLDC will provide a full response to its position on impacts within its LIR and Written Representation. Without prejudice to the details to be expressed in those documents, WLDC considers the following key matters to be the subject of specific focus during the examination phase: Policy framework – weight to document for the purpose of decision making under the PA2008; Cumulative impacts</p>	<p>The Applicant notes this comment.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>Project specific impacts Mitigation and control mechanisms (codes of control/method statements) The DCO – scope, provisions and requirements.</p> <p>3.4. WLDC commits to engaging fully in the examination of the Tillbridge Solar Project and will continue to work with the applicant's and other Interested Parties to ensure the process is robust and efficient.</p>	
RR-212	Newark and Sherwood District Council	Effect of One Earth Solar Farm	Newark and Sherwood District Council note that Chapter 18 'Cumulative Effects and Interactions' of the Environmental Statement identifies One Earth Solar Farm (Proposed DCO) as an 'other development' within the 10km Zone of Influence with potential to generate cumulative effects. As the One Earth Solar Farm proposal encroaches into the Newark and Sherwood District, the Council has a vested interest in the assessment of cumulative effects and interactions with the proposal and therefore wishes to register as an interested party.	The Applicant notes this comment. An assessment of cumulative effects with One Earth Solar Farm is presented within Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. No significant cumulative effects with One Earth Solar Farm have been identified.

2.3 Parish Councils

Table 2-3. Applicant's Responses to Relevant Representations – Land Interests

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-292	Stow Parish Council	Environmental impacts of the Scheme	<p>Stow Parish Council submission concerning the application for Tillbridge Solar</p> <p>Introduction This submission provides the views of Stow Parish Council (SPC hereafter) on the application for the Tillbridge Solar Panel farm. Recently there has been a spate of applications for development of solar farms in our area, namely: Cottam 1, 2 and 3; West Burton 1, 2 and 3; Gate Burton; Tillbridge Solar and Stow Park. Whilst Tillbridge Solar will not be erecting solar panels in our parish, the cable route they will be using is very likely to directly cross through our parish.</p> <p>The Government's drive for a zero-carbon economy by 2050 is supported by the Parish Council, but the right balance needs to be achieved between the scale and location for renewable energy infrastructure and loss of our valued heritage, agricultural land for food, landscapes, biodiversity and public amenity such as walking and cycling routes, plus access to the countryside for health and wellbeing. We comment further on these aspects in this submission</p>	<p>The Applicant acknowledges that the Scheme on its own and in cumulation with nearby solar schemes would result in some residual significant impacts, such as landscape and visual impacts, as concluded in the Environmental Statement. However, as the Parish Council acknowledges, there is a balancing of considerations to be undertaken by the Examining Authority and ultimately the Secretary of State, which balances the Critical National Priority and urgent need for projects such as the Scheme to deliver on the Governments targets of net zero, against adverse effects, which in some cases are unfortunately unavoidable, despite the Applicant's best efforts to avoid and minimise these.</p> <p>The Applicant has set out in more detail below the measures taken to minimise the adverse effects of the scheme, to work with other solar developments in the area and to set out some of the significant residual effects that would likely result.</p> <p><u>Site Selection</u></p> <p>The location and design of the Scheme is the result of a comprehensive site selection process that was led by environmental and planning considerations to avoid and minimise impacts as early as possible. Following this, the Scheme has undergone an iterative design process which has resulted in the delivery of a functional and efficient</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>about the proposed Tillbridge development, but they are even more pertinent due to the many other solar farms proposed nearby.</p> <p>To quote an email from one of our residents <i>"My concern is whatever will it be like living in this area where everywhere we look will be a sea of solar instead of farmland, producing the nation's food"</i>. Collectively these projects represent the industrialisation of agricultural land in this area, a negative impact that will last for generations and decimate local economies and communities.</p>	<p>Scheme design. This design would deliver a large amount of renewable and low carbon electricity using solar PV arrays, whilst also being sensitive to the local context and surrounding area within which it is located, avoiding and minimising impacts on the environment as far as practicable.</p> <p>The Applicant's design team worked collaboratively with the project team to provide a cohesive and responsive design for the Principal Site which has been informed by statutory consultation and stakeholder engagement, environmental assessments, engineering and design considerations, and in collaboration with other developers bringing forward solar DCO projects within proximity to the Scheme.</p> <p>The Cable Route Corridor was designed in collaboration with the developers of the Cottam Solar Project, Gate Burton Energy Park, and the West Burton Solar Project, to derive a shared cable corridor to minimise impacts through design.</p> <p>Design objectives were developed at an early stage and have guided the Scheme's design response to the local context to develop a good design that balances the need to maximise renewable energy generation from the Scheme, whilst minimising potential adverse impacts and providing mitigation and enhancement measures where practicable, as set out in section 3.10 Design and Access Statement [AS-031].</p> <p>This has resulted in a Scheme which, with the implementation of mitigation, avoids residual significant adverse effects in relation to biodiversity sites; protected species or habitats; agricultural land; heritage assets; flood risk; water quality; access. Impacts on the local area have therefore been minimised as far as practicable.</p> <p><u>Cumulative Impacts</u></p> <p>The assessment of cumulative impacts of the Scheme with other existing and proposed energy developments as well as other developments in the locality is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. The Scheme and other solar DCOs have worked collaboratively during design development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures. Consideration has also been given as to how habitat creations link with other proposed developments and more widely across the landscape.</p> <p>The Applicant acknowledges that there are cumulative effects as a result of the Scheme and other solar schemes in the area; significant cumulative effects have been identified on three landscape character areas and eight representative views during construction and decommissioning however these are temporary and short term, for the duration of the construction period. A temporary significant beneficial effect from the generation of construction employment at a local scale was also identified.</p> <p>Whilst the Applicant has minimised visual impacts as far as practicable, as explained above, the Scheme (along with other solar schemes) would also result in significant cumulative effects on Local Landscape Character Area 3A Till Vale at year 15 of</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>operation, and two significant visual effects at Viewpoint 7 on the B1398 Middle Street, Glentworth Cliff Farm and Viewpoint 13 at public footpath (Hems/787/2) on Lincoln Cliff, Hemswell at year 15 of operation. All other cumulative effects have been assessed as not significant. Cumulative landscape and visual impacts will be managed in accordance with the relevant environmental management plans, including the Framework LEMP [EN010142/APP/7.17(Rev02)]</p> <p>Further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is provided in the Joint Report on the Interrelationship with other National Infrastructure projects [APP-215 to APP-217].</p> <p><u>Agricultural Land</u></p> <p>Information relating to the Scheme's impact on agricultural land is set out in Chapter 14: Soils and Agriculture of the Environmental Statement [APP-046]. This states that the Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). The effect of the Scheme on agricultural land has been considered in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046] and the assessment of cumulative impacts of the Scheme with other developments in the locality is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. Both chapters conclude that there would be no significant effects in isolation, or cumulative effects in relation to agricultural land and food production, or agricultural employment and circumstances. In relation to agricultural jobs and livelihoods, it is acknowledged that during construction the land will not be available for grazing livestock or equestrian use, resulting in a temporary and negligible effect on farming circumstances, which is not significant, and is short term and temporary. During operation, the Scheme's occupation of landowners' land, as a new diversified enterprise, will provide a new income stream independent of variations in profitability of arable production. This diversified enterprise may also enable managers of farm businesses that are currently too small to be economically viable, to wind up the farm business. This is assessed to result in a temporary moderate beneficial effect, which is significant, in section 15.8 of Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046]. Following decommissioning, the land used for the Scheme can be reverted back to agricultural land. The change of use from predominantly intensive arable farming to semi-improved grassland across the Order limits will be beneficial to the structure and quality of soils, making it suitable for reversion to agricultural use.</p>
RR-292	Stow Parish Council	Policies in the Neighbourhood Plan	The Central Lincolnshire Local Plan 2022 does not provide a framework for guiding large-scale solar farm development proposals. Our Neighbourhood Plan did not anticipate, and was not written, to address concurrent large-scale applications for commercial solar PV farms. However, the aspirations of the electorate e.g., conservation of heritage assets, enhancement of biodiversity, access to the countryside are very clear in our Neighbourhood Plan, adopted in July 2022. For this reason, we allude to it in the following text.	The Applicant agrees that the Central Lincolnshire Local Plan (Ref 1-29) and the Sturton by Stow and Stow Neighbourhood Plan (Ref 1-30) do not provide the primary framework for assessing large-scale solar developments. Given the Scheme is confirmed to be a National Significant Infrastructure Project (NSIP) under the PA 2008 (Ref 1-31) (as the Scheme comprises a generating station with a capacity of more than 50MW) the primary policy consideration for its assessment is the adopted Energy National Policy Statements. This means that the direction in the NPS weighs more heavily than local planning policy and is the primary direction of the planning assessment of the Scheme set out in the Planning Statement [AS-029] .

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>The area Stow is in the district of West Lindsey. Stow Parish is in the Till Vale and is overwhelmingly agricultural with wide, open vistas, for example, across the fields to Lincoln Cathedral on the limestone ridge. Within our parish there are three Scheduled Monuments. These are covered in Policy 6 of our Neighbourhood Plan.</p> <ul style="list-style-type: none"> • Site of a college and Benedictine abbey, St Mary's Church in Stow (1012976) [Historic England listing] • Coates medieval settlement and moated site (1016979). • Medieval Bishop's Palace and Deer Park (1019229). <p>There are several Grade 1 and 2 listed buildings, on the likely construction routes:</p> <ul style="list-style-type: none"> • St Mary's Church (1146624) • St Edith's Church (1146742) • Stables and Pigeon Cote (1146735) and Threshing Barn (1064063), Church End Farm. • Manor Farm (1359486). <p>And buildings that are not listed, but are considered as historically significant locally, for example:</p> <ul style="list-style-type: none"> • West Farm, Normanby • 2, Stow Park Road, Stow. • 3, Normanby Road, Stow. 	<p>It is acknowledged, however, that in accordance with Section 104(2)(b) of the PA 2008, the Secretary of State will also have regard to any Local Impact Report and Section 104(2)(d) to any other important or relevant matters. The Local Impact Report will enable the relevant local planning authorities to submit a report setting out its views on local issues with reference to the adopted Central Lincolnshire Local Plan (Ref 1-29) and relevant made Neighbourhood Plans.</p> <p>Appendix B of the Planning Statement [AS-029] sets out how the Scheme is in accordance with local planning policy. Table 2 sets out how the Scheme accords with the Central Lincolnshire Local Plan (Ref 1-29) and Table 14 sets out how the Scheme accords with the Sturton by Stow and Stow Neighbourhood Plan (2022) (Ref 1-30).</p> <p>Section 12.8 of Chapter 12: Landscape and Visual of the Environmental Statement [APP-043] sets out the landscape and visual effects of the Scheme upon landscape character, including the Till Vale and section 8.9 of Chapter 8: Cultural Heritage of the Environmental Statement [APP-039] assesses impacts upon heritage. This includes consideration of the setting of designated and non-designated heritage assets. No significant effects on heritage assets along the construction traffic routes are considered likely, with the measures set out in the Framework CTMP [EN010142/APP/7.11(Rev01)] to avoid direct impacts from AIL movements and as explained in National Highways guidance (LA111 Noise and Vibration), a maintained road surface free of irregularities will not have the potential to lead to significant effects from traffic induced vibration. Furthermore, section 13.10 of Chapter 13: Noise and Vibration of the Environmental Statement [AS-006] demonstrates that there are no significant residual effects from construction traffic noise.</p> <p>Section 8.9 of Chapter 8: Cultural Heritage of the Environmental Statement [APP-039] sets out the cultural heritage assessment and effects of the Scheme upon heritage assets including the scheduled monuments and designated assets set out in RR-292 by Stow Parish Council. The non-designated heritage assets of local significance were scoped out for further assessment in the Cultural Heritage DBA (Appendix 8-2 of the Environmental Statement [APP-059]) as there would be no impact altering the setting and significance of these assets from works related to the Cable Route Corridor.</p>
RR-292	Stow Parish Council	Overall Carbon Footprint of the Scheme	<p>There are many questions concerning the total life-cycle carbon footprint of the Tillbridge Solar Project. A proper assessment of this would include the carbon footprints of the material sourcing, equipment manufacture, construction, operation, eventual removal and recycling of the panels and other equipment, and the reinstatement of the countryside. We are not aware that such an assessment has been created or provided and feel strongly that the project should only be allowed to proceed when it has been proven to provide a significant and clearly quantified reduction in overall Carbon.</p>	<p>Please refer to the lifecycle GHG (greenhouse gas emissions) Impact Assessment within Chapter 7: Climate Change of the Environmental Statement [APP-038]. This considers all GHG emissions arising over the lifecycle of the Scheme including direct GHG emissions arising from activities within the Order limits and indirect emissions from activities outside the Order limits and embodied carbon within construction materials. GHG emissions saving are expected to be achieved throughout the lifetime of the Scheme compared to alternative fossil fuel energy generation types. Therefore, the GHG emissions during construction, operation and decommissioning of the Scheme can be considered to be 'offset' by the net positive impact of the Scheme on GHG emissions</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>The resulting GHG emissions from the lifetime construction and operation of the Scheme equates to approximately 3.4 million tonnes of CO₂e. The carbon intensity of the most carbon-efficient fossil-fuelled technology currently available, a Closed Cycle Gast Turbine (CCGT) generation facility, is approximately 80% higher than the carbon intensity of the Scheme (when considering the whole life carbon of the Scheme). When considering whole life carbon emissions, the Scheme will achieve significant GHG savings throughout its lifetime, saving approximately 15 million tonnes of CO₂e (when compared to generating the equivalent amount of energy via a CCGT facility, and demonstrates the role solar energy generation has to play in the transition to a low carbon economy. This is supported by government policy including the Department for Energy Security & Net Zero: Overarching National Policy Statement for Energy (EN-1) (2023), which confirms that wind and solar generation systems are vital to achieving its decarbonisation plan to reach net zero GHG emissions by 2050.</p> <p><u>Recycling of Panels and Other Equipment</u></p> <p>Construction, operational and demolition waste is assessed in Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048], cumulative effects are assessed in a Waste Topic Paper which focuses on the cumulative assessment of waste, which forms Appendix A to this report, submitted at Deadline 1.</p> <p>As set out in the Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)], which will inform a detailed OEMP and DEMP, respectively, that will need to be approved by the Local Planning Authority, the Applicant is committed to maximising recycling and reuse of the Scheme components at the end of their operational life. This is secured by Requirement 13 and 20 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] which require the detailed OEMP and detailed DEMP to be substantially in accordance with the Framework OEMP and Framework DEMP, respectively. The Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] have been updated at Deadline 1 to include a commitment to recycle 70% of waste during the operational and decommissioning phases.</p> <p>There are already organisations around the UK and Europe specialising in solar recycling, such as PV Cycle and the European Recycling Platform. They are working with solar developers to minimise electrical waste and recycling old panels in line with the Waste Electrical and Electronic Equipment (WEEE) Regulations (Ref 1-8). In addition, companies like SECONDSOL offer a marketplace service for the purchase and selling of second-hand PV panels and equipment, where there is still a good level of life in the equipment remaining. Panels that have developed faults or damage can also be refurbished and repowered by specialist companies and the manufacturers and resold or reinstalled. The Applicant will adhere with the industry best practice outlined in Solar Power Europe's Lifecycle Quality Best Practice Guidance.</p> <p><u>Reinstatement of Land</u></p> <p>The vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following decommissioning of the Scheme. As set out in section 5.7 of the Framework Soil Management Plan (SMP) [EN010142/APP/7.12(Rev01)], decommissioning will aim to restore all agricultural land</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-292	Stow Parish Council	Impacts on employment, agriculture and tourism	<p>Societal impact We have had no response to questions raised concerning the effect of the project on food production and employment opportunity in the agricultural sector, and on industries such as tourism. We have not found an assessment of these issues in any documentation.</p>	<p>without any degradation of the current ALC Grade, as informed by the detailed ALC survey. The Framework SMP [EN010142/APP/7.12(Rev01)] sets out measures to be taken to ensure that the soil is protected and is able to revert back to its former condition, this includes the management of soil following removal of hard standing, and providing grass covers which should be maintained over three years prior to any return to arable production. Decommissioning of the Scheme and restoration/reinstatement of the land back to its former condition after 60 years is required and secured via requirement 20 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>The Applicant has reviewed previous correspondence with Stow Parish Council and has been unable to find any previous correspondence or feedback containing questions regarding food production and agricultural employment opportunities, or tourism. These matters are addressed in turn below in response to this relevant representation.</p> <p><u>Agricultural Land and Food Production</u></p> <p>Agricultural land quality was a key consideration in the Applicant's site selection process. As set out in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and the Design and Access Statement [AS-031].</p> <p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into account reductions to the Order limits following the Applicant's Change Application submitted in September 2024, for the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is provided within section 15.6 of Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p> <p>As set out in section 15.8 of Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. All other infrastructure will be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a Decommissioning Environmental Management Plan (DEMP). In accordance with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)] submitted as part of the Application. The only potential permanent removal of land from agricultural use may result from</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However, the potential change of use of 0.07% of agricultural land that is BMV land to proposed woodland is not considered to be significant, and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60 year operational period has the potential to accrue improvement to soil function over a large area. Whilst not food production, woodland presents benefits provided by the Scheme in terms of biodiversity and provides future opportunities for farm diversification.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 of Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire. Land can continue in agricultural production through the operational phase and that following operation, the land used for the Scheme can revert back to current agricultural management.</p> <p>Section 18.16 of Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] assesses the loss of agricultural land in combination with all cumulative solar schemes (Gate Burton Energy Park, West Burton Solar Project and the Cottam Solar Project and others set out in Table 18-22 in Chapter 18 of the Environmental Statement [APP-049]). This confirms that in combination with all cumulative solar developments that there is still not a significant effect on agricultural production as a result of the schemes. The area of agricultural land that would be temporarily taken out agricultural use across all four schemes would be 2.2% of agricultural land in Lincolnshire.</p> <p>The Applicant has also prepared a report setting out the cumulative effects of solar projects on BMV land within Lincolnshire, which is located at Appendix B of this document. This report further concludes that the potential permanent loss of BMV land in Lincolnshire as a result of solar DCO projects would be 0.8%, and would be 0.27% as a result of ground mounted solar TCPA projects. This amounts to only 0.9% of all BMV land within Lincolnshire permanently lost to solar projects within Lincolnshire.</p> <p>The Secretary of State in his recent decisions for Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] recognised the local concerns on the loss of productive agricultural land but concluded that, on a cumulative basis alongside the other solar projects (including the Tillbridge Solar Project), that the cumulative assessments forming part of each application have suitably considered cumulative effects. The Secretary of State at paragraph 4.178 of the Gate Burton Energy Park decision states that the <i>“cumulative loss of BMV land in Lincolnshire due to NSIP solar projects amounts to 0.83% of the total BMV land with a further 0.21% loss to TCPA solar projects. The Secretary of State considers that this is only around 1% of the total BMV land in Lincolnshire, further noting that the land will be lost for a temporary, albeit long-term period and that the land can be returned upon decommissioning of development to</i></p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p><i>its original state. The Secretary of State places great importance on BMV land but is satisfied that the siting of the Proposed Development on BMV land has been justified.”</i></p> <p>The Tillbridge Solar Project, through its site selection process sought to minimise impacts upon BMV land and through design iteration of the Scheme, has further minimised impacts. The siting of the Scheme on BMV land is justified and the loss of agricultural land and therefore potential food production would be temporary and reversible allowing the Principal Site to be brought back into agricultural use following decommissioning.</p> <p>In the recent Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] decisions, the Secretary of State (SoS), determined that the cumulative loss of BMV land across these two schemes, together with West Burton and the Tillbridge Solar Project, and therefore the potential impact upon agricultural land and food production, will be minor and would not impact food security when these four solar NSIPs are considered both individually and cumulatively. The SoS agreed with the ExA's recommendations on agricultural land use in considering the Gate Burton Energy Park. The ExA confirmed in its recommendation report at paragraph 3.11.114 that:</p> <p><i>“Whilst I appreciate the concerns of many IPs and the concerns expressed there is no meaningful assessment of the extent of lost production. Furthermore, given the national and regional figures identified by the Applicant in respect of cereal production even taking account of the whole site area there would be little discernible effect. This would be true even in a cumulative scenario on the basis of the figures produced by the Applicant.”</i></p> <p><u>Employment</u></p> <p>The employment effects associated with the Scheme (including existing employment) are considered in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] and Section 15.8 of Chapter 15: Soils and Agriculture of Environmental Statement [APP-046] undertakes an assessment on farming circumstances. Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] concludes that Principal Site currently supports 10 jobs through agricultural activities, which will be offset by the provision of 11 jobs running and managing the Scheme whilst its in operation. Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046] explains that several separate farm businesses occupy land within the Principal Site, and it is acknowledged that during construction the land will not be available for grazing livestock or equestrian use, resulting in a temporary and negligible effect on farming circumstances, which is short term and temporary, and not significant. During operation, the Scheme's occupation of landowners' land, as a new diversified enterprise, will provide a new income stream independent of variations in profitability of arable production. This diversified enterprise may also enable managers of farm businesses that are currently too small to be economically viable, to wind up the farm business. This is assessed to result in a temporary moderate</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-292	Stow Parish Council	Construction traffic	<p>Construction traffic We have major concerns about the impact of traffic for the construction of both the site and the cable route. The HGVs and Abnormal Loads going to the cable route access points are likely to travel through our village. The Abnormal Loads for the cable route carry 30 Tonne cable drums and are 26m long.</p> <p>Vehicles accessing the cable route are very likely to pass through Stow, and in doing so pass very close to private houses and to the Scheduled Monument of St Mary's Church. We have not seen any assessment of the effects of the very heavy vehicles proposed on the foundations of the Scheduled Monument, and on the private houses adjacent to the route. We would like independent structural experts to assess the potential for damage to the Monument and houses adjacent to the route, and for the issue of immediate and potential subsequent liability for damage to be made crystal clear through these proposals.</p>	<p>beneficial effect, which is significant, in section 15.8 of Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046].</p> <p>Tourism</p> <p>In relation to the point about tourism, the Applicant's EIA Scoping Report (refer to Appendix 1-1 of the Environmental Statement [APP-051]) submitted to PINS contained no specific reference to an assessment of effects on tourism as no specific receptors, such as visitor attractions, had been identified within the defined Study Areas to justify such an assessment being needed. The Scoping Opinion response received from PINS (refer to Appendix 1-2 of the Environmental Statement [APP-052]) also did not request that such an assessment was provided. However, Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043] did assess the impact on visitor views in the vicinity of the Scheme and the loss of long distance views as relevant. This includes from Public Rights of Way (PRoW) which provide the main opportunity for recreation in this otherwise agricultural area. Accordingly, Chapter 14: Socioeconomics and Land Use of the Environmental Statement [APP-045] also assessed impacts on PRoW users which could include visitors to the area. On this basis, potential effects on tourists were assessed in the Environmental Statement to the extent that effects on views and use of PRoWs were set out which comprise the main matters of potential impact. The assessment concluded that there would be no significant effects.</p> <p>Consultation</p> <p>The Applicant had regard to all feedback provided during the non-statutory and statutory consultations. All feedback provided was analysed and responded to, as detailed in the Consultation Report [APP-021] submitted with the DCO application.</p>
				<p>Figures 1 and 2 of the Framework CTMP [EN010142/APP/7.11(Rev02)] set out the proposed HGV and AIL routes for the Principal Site and Cable Route Corridor. HGVs and AILs will travel along Sturton Road (B1241) and Stow Park Road/Marton Road/Tillbridge Lane (A1500) to access and construct the Cable Route corridor. Chapter 16: Transport and Access of the Environmental Statement [APP-047] is informed by Transport Assessment contained at Appendix 16-2 of the Environmental Statement [APP-118]. This assesses the highway capacity of the routes proposed for the construction of the Cable Route Corridor and the suitability of existing roads in terms of highway safety. Mitigation and management measures are included as embedded mitigation forming part of the Scheme and are set out in Section 16.7 of Chapter 16: Transport and Access of the Environmental Statement [APP-047]. This includes the provision of suitable points of access with adequate visibility and proposed improvements to local roads should this be required. Chapter 16: Transport and Access of the Environmental Statement [APP-047] and Appendix 16-2 of the Environmental Statement [APP-118] confirm that the additional traffic movements as a result of the Scheme are within the overall capacity of the highway network with no</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>The construction works, including the cable route, are predicted to last 24-36 months, best case. The B1241 is of particular concern in this respect, as it passes through the villages of Stow and Normanby en route to cable accesses just north of Stow.</p> <p>In the Cottam Solar plan the cable route work was labelled as “Temporary” and highlighted as unacceptable in the parish’s response as that designation was used to exclude the cable route traffic from any Safety and Delay assessments.</p> <p>The B1241 passes the local Primary School (which is a high sensitivity receptor) at Sturton. Have the safety and access concerns about the school been taken into account when access to the cable route has been considered? Project traffic would almost certainly pass through the centre of Stow and Normanby. This traffic includes the cable route traffic with its HGVs, and Abnormal Loads, the huge and heavy Abnormal Loads for the delivery of transformers, and the various lorries, tippers, buses etc. associated with both the cable route and the solar panel field construction.</p> <p>We strongly object to the project’s impact on public safety and our ability to move around being ignored by the developers. We would draw your attention to the importance of avoiding damage to Scheduled Monuments along construction routes. The Cottam Solar plan mentions the bends on the B1241 within Stow, and points out that: “It should be noted that there is the potential for a direct physical impact upon one Scheduled Monument during the construction phase, this being due to the abnormal loads oversailing as they pass through the village of Stow. The Order Limits indicate that this would be immediately adjacent to the churchyard wall, which forms the boundary of the Site of a college and Benedictine Abbey, St Mary’s Church (NHLE 1012976). This has the potential to result in impacts of Minor or Moderate Adverse magnitude and therefore effects of up to Large Adverse significance should any damage to the churchyard wall or archaeological remains beyond occur.</p> <p>It goes on to say “The only potential direct physical impact to a designated heritage asset is the potential for damage to the wall of the churchyard at the Site of a college and Benedictine Abbey, St Mary’s Church (NHLE 1012976) during construction. This is due to the fact that HGVs delivering abnormal loads will need to mount the pavement adjacent to the Scheduled Monument, but this can be mitigated by the close monitoring of these manoeuvres by a suitably qualified banksman to ensure that this potential adverse impact can be avoided.” Have the potential effects of the 24.9 tonne</p>	<p>‘severe’ impacts and that suitable accesses will be created to ensure no adverse impacts on highway safety.</p> <p>A full and detailed assessment of potential traffic and transport impacts from construction at sensitive receptors has been undertaken within section 16.8 of Chapter 16: Transport and Access of the Environmental Statement [APP-047]. The conclusions indicate that during construction, only one significant residual adverse effect is anticipated on severance, pedestrian delay and non-motorised users’ amenity. This is in relation to severance, pedestrian delay (incorporating delay to all non-motorised users) on the B1241 (ATC 23) which passes Sturton-by-Stow Primary School (Table 16-20 of Chapter 16: Transport and Access of the Environmental Statement [APP-047]). The significant adverse effect on the B1241 will only occur in the worst-case scenario for a short period of time (in the order of a couple of weeks), if activity on the construction of the Cable Route Corridor is concentrated on the B1241 north of Fleets Road.</p> <p>Section 7 of the Framework CTMP [EN010142/APP/7.11(Rev 02)] provides full details of embedded mitigation measures that are proposed to prevent or reduce potential adverse effects associated with construction traffic on local roads. A detailed CTMP (which must substantially accord with the Framework CTMP) will need to be approved post consent prior to construction with the relevant local authorities and this is secured by requirement 14 in Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>As detailed in section 5.6 of the Framework CTMP [EN010142/APP/7.11(Rev02)], a specialist haulage service will be employed for transportation of the transformers and cable drums, with the necessary escort, permits and traffic management, and in consultation with the relevant highway authorities.</p> <p>Vehicle tracking for cable drum delivery vehicles through Stow are included in Appendix A of the Framework CTMP [EN010142/APP/7.11(Rev02)] (drawing ref. 60682158-ACM-XX-00-DR-CE-1604) and identify where the vehicle will be in close proximity to buildings and street furniture and where additional caution is required.</p> <p>Development consent was granted for the Cottam Solar Project [EN10133] on 5 September 2024. The Tillbridge Solar Project has been designed in collaboration with the other NSIP solar projects proposed in the area with a common point of connection at the National Grid Cottam Substation to deliver a shared Cable Route Corridor. The use of the B1241 as a construction route was examined by the ExA in relation to the Cottam Solar Project. In his report, the ExA at paragraph 3.10.28 confirmed that:</p> <p style="text-align: center;"><i>“Accordingly, we are satisfied that the effects arising from construction traffic access, routing and generation would be ably accommodated on the local highway network.”</i></p> <p>In addition, the ExA concluded at paragraph 3.10.37 of the recommendation report that it was satisfied that cumulative effects would be “adequately ameliorated by</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>'Abnormal loads' on the foundations of the entirety of the Monument been addressed? If the mitigations are not adequate, and significant damage is done to these buildings – who has the liability and what will be the insurance limit required to repair such a historical monument not just in the immediate term but for subsequent years when this damage may eventually be realised?</p> <p>We welcome the proposed sharing of the cable route with other Solar projects and would like the overlap of individual project connections to be minimized by a “once only” construction of the cable route with sufficient capacity and simplicity of connection for the existing and any future Solar projects. This would help to minimize the disruption to residents.</p>	<p><i>traffic movements being spread over the highway network, having regard to the access information contained with the Joint Report.”</i></p> <p>The SoS in his decision also confirmed at paragraph 4.6 that he agreed with the ExA's conclusions in relation to transport and access matters attributing neutral weight in the planning balance.</p> <p>We note that Stow Parish Council welcomes the proposal of the shared Cable Route Corridor. The measure is intended to minimise the environmental effects and the disruption of the construction phases of the relevant projects on local communities. The Applicant has entered into a Cooperation Agreement with the other solar NSIP developers with the aim to deliver the schemes in a coordinated way whilst minimising disruption to the local communities.</p> <p>With regards to impacts on the Site of a college and Benedictine Abbey, St Mary's Church (NHLE 1012976), the Framework CTMP [EN010142/APP/7.11(Rev02)] has been updated at Deadline 1 to confirm that AIL manoeuvres adjacent to buildings and existing structures will be monitored by a suitably qualified banksman to ensure potential adverse impacts are avoided. In addition, any AIL deliveries would generally be escorted by the local police. Impacts on foundations would be checked at detailed design stage as part of the detailed AIL routeing plan to be produced by the Contractor, to ensure the line of loading influence does not impact the foundations and the loads are carefully positioned with the path the vehicles are required to take physically on the ground. The Framework CTMP [EN010142/APP/7.11(Rev02)] also includes the completion of condition surveys on the road surface and taking preventative measures against damage to the road surface if necessary.</p> <p>As explained in National Highways guidance (LA111 Noise and Vibration) (Ref 1-32), a maintained road surface free of irregularities will not have the potential to lead to significant effects from traffic induced vibration, so no impacts on the church and the retaining wall from vibration from construction traffic are expected. As such, no significant effects on the Site of a college and Benedictine Abbey, St Mary's Church (NHLE 1012976) are considered likely.</p>
RR-292	Stow Parish Council	Biodiversity	<p>Biodiversity</p> <p>This Tillbridge project will undoubtedly destroy many existing natural territories, demolish safe haven corridors, and drive away animals from the area. In the event that, the Tillbridge Solar Project is accepted for development, a condition should be imposed that any replacement wildlife habitats proposed should be created and allowed to mature before the existing habitats are removed. This will allow the affected wildlife to migrate to the new areas, rather than leave the area or simply die.</p> <p>There is the potential to create a large wetland alongside the river Till to the east of Stow and Sturton by Stow, which would enable</p>	<p>The Applicant has undertaken detailed ecological surveys to understand the habitats and species present. Full details of these surveys are provided in Table 9-11 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with further details set out in Appendices 9-1 to 9-12 of the Environmental Statement [APP-081 to APP-094 and [EN010142/APP/6.2(Rev01)]].</p> <p>A detailed assessment of the potential impacts of the Scheme on biodiversity is presented in section 9.9 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with particular reference to Tables 9-14 and 9-15. The Applicant has carefully designed the Scheme to avoid or minimise adverse effects to biodiversity, with substantial measures embedded and detailed in Table 9-13 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>people and visitors to the area to enjoy wildlife and to (re)create some of the lost wetland.</p>	<p>Measures to protect species and habitats as set out in the Framework CEMP [EN010142/APP/7.8(Rev01)], Framework OEMP [EN010142/APP/7.9(Rev01)], Framework DEMP [EN010142/APP/7.10(Rev01)] and Framework LEMP [EN010142/APP/7.17(Rev02)] will ensure that the Scheme avoids any likely significant adverse impacts on all important species, habitats and designated sites, and the inclusion of enhancement measures to increase the biodiversity value of the Scheme as an overall benefit. Requirements of the draft DCO [EN010142/APP/3.1(Rev03)] will ensure that the detailed CEMP, OEMP, DEMP and LEMP (which must be substantially in accordance with the relevant framework plan) have to be submitted and approved by the relevant planning authority prior to the relevant phase of the Scheme and must be implemented in accordance with the approved details, thereby securing the protection and enhancement measures.</p> <p>The assessment in section 9.9 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040] concludes that there will be no significant adverse effects on biodiversity and, as a result of the proposed enhancement measures, the Scheme will result in significant beneficial effects to broad-leaved woodland, running water, hedgerows and breeding birds. It will also result in beneficial effects to standing water, reptiles and amphibians, non-breeding birds, bats, badger and other mammals as a result of planting in gaps in hedgerow and the creation of new hedgerows, tree planting and conversion of arable land to grassland habitats.</p> <p>The Scheme accords with NPS EN-1 (Ref 1-17) in building-in beneficial biodiversity as part of good design. The requirement to provide a minimum 10% gain is not mandatory for NSIPs until November 2025. The Applicant has demonstrated through the submitted Biodiversity Net Gain Report [AS-062] that the Scheme will achieve at least the 10% despite this not being a mandatory requirement. The Applicant's commitment to delivering a minimum of 10% BNG is secured by both requirements 7 (landscape and ecological management plan) and 8 (biodiversity net gain) of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. Requirement 8 provides that construction cannot commence until a BNG strategy has been submitted and approved by the relevant planning authority, in consultation with the relevant statutory nature conservation body (being Natural England). The BNG strategy must be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)], which states at paragraph 4.6.2 that the Applicant is committed to achieving a minimum of 10% BNG, in accordance with the terms of the Biodiversity Net Gain Report [AS-062].</p>
RR-292	Stow Parish Council	Walking and Cycling Routes	<p>Walking and Cycling Routes One of the aspirations of our Neighbourhood Plan, in Policy 15, is the creation of new footpaths, and one is provided just to the north of Stow, linking through to Fleets Lane, which is appreciated. Sturton by Stow and Stow Parish Councils have, independently, asked for a permissive path to be created which would run between Thorpe Bridge (Western side ideally) along the ridge of the River Till riverbank over the Bridge on Ingham Lane (Squires Bridge) to the</p>	<p>The Applicant is supportive of measures to improve the walking and cycling network and has proposed two new permissive paths within the Order limits, which will provide a safe and direct pathway within the Principal Site, which connects with the existing PRoW network in the area, providing an increase in public access to open space and thereby positively supporting health and wellbeing.</p> <p>Permissive Paths within the Principal Site are illustrated on the Indicative Landscape Masterplan [AS-064] and referenced in Paragraphs 7.1.3; 8.2.3 and 8.2.4; and 8.3.41 and 8.3.42 of the Framework Landscape and Ecological Management Plan</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>northern end of Green Lane thence to its intersection with the B1241. See map below, points A and B respectively.</p> <p>We mentioned this in previous consultations and pointed out that as the banks of the River Till are elevated by flood defences, they provide a raised platform on which to walk, and thus observe both the wildlife of the Till and see over the panels to the views beyond. This should be achievable. With reference to the following map, we believe that the section of our request for access for walkers between points A (the bridge on Thorpe Lane over the Till) and B (Squires Bridge on Ingham Road) is worth including as an amenity to residents as it would link two existing PROWs. This would materially improve access to the Countryside. Public rights of way around the Cottam 1 Solar Power Project B Proposed additional PROW, along the River Till 6/7/23</p>	<p>[EN010142/APP/7.17(Rev02)]. These measures are secured through requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)], which requires that the detailed LEMP must be substantially in accordance with the Framework LEMP, and requirement 15, which provides that these permissive paths must be in place prior to the relevant phase of the Scheme and must be implemented in accordance with the approved details, thereby securing such features. Requirement 15 of the draft DCO [EN010142/APP/3.1(Rev03)] is specific to the implementation of the permissive paths preventing the commissioning of the solar PV until the two permissive paths are provided and confirming that the permissive paths must be maintained and access permitted to them by the public for 364 days a year.</p> <p>The route of the proposed new footpath mentioned in this relevant representation (from the bridge on Thorpe Lane over the Till to Squires Bridge on Ingham Road, along the route of the river) lies entirely outside the Order limits, and therefore it is not within the Applicant's control to provide.</p>
RR-292	Stow Parish Council	Community Benefit Fund	<p>A Stow Parish Council Community Benefit</p> <p>There is scope for significant investment prior to and during the construction phase as well as ongoing contributions during the lifetime of the project. Given settlements made regarding other forms of energy development and the scale of this project overall we might expect a substantial initial funding donation and then regular (inflation proofed) payments annually. This would be managed by a committee including local residents of the affected Parishes and disbursed to all the communities affected by Tillbridge.</p> <p>A number of residents have raised the financial impact they will suffer as a loss of house price depreciation, caused by being surrounded by solar panels and the damage caused by the construction traffic. Despite the obvious financial benefits afforded to the developer of this project, they have been silent on the matter of compensation for impacted residents within the Parish.</p>	<p>The Applicant is proposing a community benefits package as part of the Scheme. The intention is that this will be delivered in cooperation with the Lincolnshire and Nottinghamshire community foundations.</p> <p>The Applicant believes those communities living closest to the Scheme should benefit from it – with these communities being best placed to recommend what a 'community-benefit' should be. Suggestions to date have included funding towards improvements to existing community facilities, such as village halls and sports facilities, provision of electrical vehicle charging points, subsidised solar PV panels for community use and lower cost energy, grants for broadband and wider improvements, educational visits and wider education/apprenticeship opportunities.</p> <p>The Applicant is currently investigating how a community benefit fund could be managed and delivered independently. One way of doing this is by appointing a community foundation who would independently manage the fund. The Applicant has spoken with Lincolnshire Community Foundation and Nottinghamshire Community Foundation, who would be able to use their local knowledge and experience to identify funding opportunities and help maximise benefits for local communities. A community benefit fund would only operate if the Scheme received development consent. The Applicant recognises that other funds could also be active from other developers and are therefore considering the possibility of collaborating on these localised benefits to maximise benefits.</p> <p>Section 7 of the Framework Construction Traffic Management Plan [EN010142/APP/7.11(Rev 02)] (Framework CTMP) provides full details of embedded mitigation measures that are proposed to prevent or reduce potential adverse effects associated with construction traffic on local roads. A detailed CTMP (which must substantially accord with the Framework CTMP) will need to be approved post consent prior to construction with the relevant local authorities and this is secured by requirement 14 in Schedule 2 to the draft Development Consent Order [EN010142/APP/3.1(Rev03)].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-292	Stow Parish Council	Comment on conclusions	Conclusions Members of the Parish Council and local residents in principle support the solar power as one element in reducing fossil fuel use, but this collection of proposals raises significant concerns:	The Applicant notes this comment and has addressed the concerns raised in the responses provided above and below.
RR-292	Stow Parish Council	Lifecycle carbon footprint	The viability of the project in terms of lifecycle carbon footprint has not been demonstrated. We feel that the project should not be allowed to proceed until it is demonstrated to produce a significant contribution to achieving the Government's net-zero ambition:	The GHG impact assessment within Chapter 7: Climate Change of the Environmental Statement [APP-038] provides details on the carbon impact of the Scheme and how it aligns with the government's commitment to decarbonise the electricity sector. When compared to the equivalent amount of energy generation from a fossil fuelled Combined Cycle Gas Turbine, the Scheme saves approximately 15 million tonnes of CO2e across its operational lifetime. As stated in NPS EN-1 (Ref 1-17) a net-zero 2050 consistent system will likely be composed of predominantly wind and solar generation systems.
RR-292	Stow Parish Council	Cumulative effects on agriculture and tourism	The sheer number of projects currently under consideration, which would industrialise farmland to the detriment of local residents, and the agricultural and tourism industries;	The Applicant acknowledges that there may be some concern around the number of solar projects in the local area, and has undertaken an assessment of cumulative impacts of the Scheme with other existing and proposed energy developments as well as other developments in the locality is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] .
RR-292	Stow Parish Council	Loss of agricultural land	The loss of productive agricultural land and the jobs associated with it.	<p>The Scheme and other solar DCOs have worked collaboratively during design development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures. Consideration has also been given as to how habitat creations link with other proposed developments and more widely across the landscape.</p> <p>The Applicant acknowledges that there are cumulative effects as a result of the Scheme and other solar schemes in the area; significant cumulative effects have been identified on three landscape character areas and eight representative views during construction and decommissioning however these are temporary and short term, for the duration of the construction period. A temporary significant beneficial effect from the generation of construction employment at a local scale was also identified.</p> <p>Whilst the Applicant has minimised visual impacts as far as practicable, as explained above, the Scheme (along with other solar schemes) would also result in significant cumulative effects on Local Landscape Character Area 3A Till Vale at year 15 of operation, and two significant visual effects at Viewpoint 7 on the B1398 Middle Street, Glentworth Cliff Farm and Viewpoint 13 at public footpath (Hems/787/2) on Lincoln Cliff, Hemswell at year 15 of operation. All other cumulative effects have been assessed as not significant. Cumulative landscape and visual impacts will be managed in accordance with the relevant environmental management plans, including the Framework LEMP [EN010142/APP/7.17(Rev02)].</p> <p>Further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is provided in the Joint Report on the Interrelationship with other National Infrastructure projects [APP-215 to APP-217].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>It is also important to note that both the Gate Burton Energy Park [EN10131] and the Cottam Solar Project [EN10133] have obtained development consent with the ExA having already examined cumulative effects and the SoS having considered the ExA recommendations. With respect to the Gate Burton Energy Park, the SoS at paragraph 4.89 agreed with that the methodology used to consider cumulative effects taking into account the worst-case scenario and that there are two significant cumulative effects identified on landscape and visual receptors. At paragraph 3.14.20 of the ExA's report, it was concluded that:</p> <p><i>“Overall and I am satisfied that the combination of both effect interactions and cumulative effects between the short list of schemes in the locality have been taken into account in reaching my conclusions. The Applicant has sought to introduce collaboration with the developers of the other solar NSIP schemes, not least through the shared GCC which also facilitates shared communication and consultation potential and has sought to embed the potential for further collaboration in the fCTMP. Whilst there may be some effect interactions that would occur, for example, landscape and visual amenity and noise and vibration, I am satisfied that there are no significant effects from effect interactions between differing effects on receptors, such that would increase the intensity and magnitude of effect. I agree with the Applicant's conclusions of the assessment of cumulative effects where two significant cumulative effects are identified on landscape and visual receptors.”</i></p> <p>In applying the planning balance, the ExA at paragraph 5.3.13 concludes that <i>“none of the matters which I have weighed against the Order being made, either in isolation or in combination, outweigh the significant benefits that I have identified.”</i></p> <p>The Cottam Solar Project Environmental Statement Chapter 23 identified significant cumulative effects after embedded mitigation and mitigation measures have been applied with the ExA concluding on cumulative matters at paragraphs 3.13.30 of the recommendation report that:</p> <p><i>“We are satisfied that the Applicant has adequately assessed the likely significant effects of the Proposed Development cumulatively with other planned development and that the Environmental Statement includes sufficient information on how the effects of the proposal would combine and interact with the effects of other development during construction, operation and decommissioning. Accordingly, we are satisfied that the requirements of the EIA Regulations, 2011 NPS EN-1 and 2024 NPS EN-1 are met.”</i></p> <p>The SoS confirmed at paragraph 7.3 of his decision that he agreed with the ExA's conclusions in respect of cumulative effects and that despite these impacts that the</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>benefits of the Proposed Development outweigh its adverse impacts. The SoS goes on to state at paragraph 7.6 of his decision that:</p> <p><i>“The Secretary of State does not believe that the national need for the Proposed Development as set out in the relevant NPSs is outweighed by the Development’s potential adverse impacts,”</i></p> <p>Against the context above, the Planning Statement [AS-029] submitted in support of the Tillbridge Solar Project confirms at paragraph 7.4.34 that significant landscape and visual cumulative effects remain when the Tillbridge Solar Project is considered in combination with the other solar NSIPs. Whilst each development consent will be considered on its merits, in applying the overall planning balance, the recent approval of development consent for the Gate Burton Energy Park and the Cottam Solar Project are important and relevant in the consideration of the Tillbridge Solar Project. All three projects, either through ratification by the SoS in relation to the made DCOs or through the technical work submitted in support of the Tillbridge Solar Project agree that there are cumulative effects that attach negative weight. However, the made development consents agree that despite this negative weight, the benefits of the proposed developments are not outweighed by their adverse impacts confirming that development consent should be granted in both cases. In the case of the Tillbridge Solar Project, the primary policy consideration is its compliance with the designated Energy NPS. Given the critical national priority (CNP) to provide low carbon infrastructure, which includes the deployment of large-scale ground mounted solar, NPS EN1 (Ref 1-17) is clear at paragraph 4.2.15 that <i>“all but the most exceptional circumstances, it is unlikely that consent will be refused.”</i></p> <p>In relation to agricultural land, this was a key consideration in the Applicant’s site selection process, as set out in section 4.5 of Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and the Design and Access Statement [AS-031].</p> <p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into account reductions to the Order limits following the Applicant’s Change Application submitted in September 2024, within the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is provided within section 15.6 of Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>As set out in section 15.8 of Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. Following removal of solar PV panels, Solar Stations and BESS, these areas of the Principal Site will allow the land to be managed for arable production again following an extended period of low input grassland. In addition, the conversion of arable land to grassland during the 60 year operational period has the potential to accrue improvement to soil function over a large area. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. Measures for the restoration of the Principal Site will be set out in a detailed DEMP. In accordance with Requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)], which includes measures such as avoiding soil handling when wetted to a plastic consistency, and maintaining a green cover.</p> <p>With regard to impacts to agricultural industries and employment, the Applicant notes that the effect of the Scheme on agricultural land also has been considered in Section 14.8 of Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] which concludes that the Scheme area forms less than 1% of agricultural land available in Lincolnshire. It states that land can continue in agricultural production through the operational phase and that following operation, the land used for the Scheme can revert back to current agricultural management.</p> <p>The employment effects associated with the Scheme (including existing employment) are considered in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] and section 15.8 of Chapter 15: Soils and Agriculture of Environmental Statement [APP-046] undertakes an assessment on farming circumstances. Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] concludes that Principal Site currently supports 10 jobs through agricultural activities, which will be offset by the provision of 11 jobs running and managing the Scheme whilst its in operation. Section 15.8 of Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046] explains that several separate farm businesses occupy land within the Principal Site, and it is acknowledged that during construction the land will not be available for grazing livestock or equestrian use, resulting in a temporary and negligible effect on farming circumstances, which is short term and temporary, and not significant. During operation, the Scheme's occupation of landowners' land, as a new diversified enterprise, will provide a new income stream independent of variations in profitability of arable production. This diversified enterprise may also enable managers of farm businesses that are currently too small to be economically viable, to wind up the farm business. This is assessed to result in a temporary moderate beneficial effect, which is significant, in section 15.8 of Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046].</p> <p>In relation to the point about tourism. the Applicant's EIA Scoping Report (refer to Appendix 1-1 of the Environmental Statement [APP-051]) submitted to PINS contained</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-292	Stow Parish Council	Loss of green space and recreational facilities	The loss of green spaces that are well used recreational facilities for local residents and visitors; walking and cycling routes for the benefit of health and well-being.	<p>no specific reference to an assessment of effects on tourism as no specific receptors, such as visitor attractions, had been identified within the defined Study Areas to justify such an assessment being needed. The Scoping Opinion response received from PINS (refer to Appendix 1-2 of the Environmental Statement [APP-052]) also did not request that such an assessment was provided. However, Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043] did assess the impact on visitor views in the vicinity of the Scheme and the loss of long distance views as relevant. This includes from Public Rights of Way (PRoW) which provide the main opportunity for recreation in this otherwise agricultural area. Accordingly, Chapter 14: Socioeconomics and Land Use of the Environmental Statement [APP-045] also assessed impacts on PRoW users which could include visitors to the area. On this basis, potential effects on tourists were assessed in the Environmental Statement to the extent that effects on views and use of PRoWs were set out which comprise the main matters of potential impact. The assessment concluded that there would be no significant effects.</p>
				<p>The Applicant has undertaken a comprehensive and robust Environmental Impact Assessment so that any likely significant effects of the Scheme can be identified and mitigated. Section 11.8 of Chapter 11: Human Health within the Environmental Statement [APP-042] assesses potential effects of the Scheme on health and wellbeing of local residents. The assessment takes a holistic approach to health and considers a wide range of health determinants which are relevant to quality of life and amenity. The assessment considers elements of the Scheme which could affect mental health (for example changes in landscape and visual amenity, noise, access to open space and employment) as well as physical health (for example associated with air pollution). No significant adverse effects are identified with regards to human health.</p>
				<p>In relation to community connectivity, the assessment in section 11.8 of Chapter 11: Human Health of the Environmental Statement [APP-042] explains that there will be no permanent closures to PRoW, and temporary closures or diversions in the worst case scenario will be managed in accordance with the Framework PRoW Management Plan [APP-228] which is secured by requirement 16 of the draft DCO [EN010142/APP/3.1(Rev03)] seeking the submission and approval by the relevant planning authority of a detailed PRoW Management Plan, which will need to be substantially in accordance with the Framework PRoW Management Plan and implemented in accordance with the approved details.</p>
				<p>In terms of the potential impacts upon existing PRoW within and close to the parish of Stow, this relates to work associated with the construction of the Cable Route Corridor. There are no existing Public Rights of Way that would be affected by the construction works associated with the Cable Route Corridor within this area. This is shown on Sheets 16, 17 and 18 of the Streets, Right of Way and Access Plans [EN010142/APP/2.4(Rev03)]. There are existing Public Rights of Way (PRoW 19/02 and PRoW 19/01) located to the south of Stow Park Road (A1500) to the east of Marton as shown on Sheet 19 of the Streets, Right of Way and Access Plans [EN010142/APP/2.4(Rev03)]. The Scheme will temporarily manage the use of PRoW Mton 68/1 through the powers sought in Schedule 6, Part 4 of the draft DCO</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-292	Stow Parish Council	Impact on biodiversity	The immediate negative impact on wildlife and biodiversity must be mitigated. These routes, paths hedgerows and trees have provided safe haven, and hunting grounds for many 100's of years, and yet over 24 months this will be destroyed. Alternative habitats must be constructed far enough in advance of the start of construction that they will be mature for wildlife to migrate into it when construction starts	<p>[EN010142/APP/3.1(Rev03)]. Chapter 16: Transport and Access of the Environmental Statement [APP-047] confirms that impacts upon this PRoW will be negligible (not significant).</p> <p>The management of PRoWs in accordance with the PRoW Management Plan [APP-228] as described above will ensure that impacts upon recreational routes are minimised either providing an alternative route during temporary works or resulting in short term impacts. The management of the temporary closure of PRoWs across the Scheme will ensure that the potential impact upon recreational routes is minimised.</p> <p>Section 16.6 of Chapter 16: Transport and Access of the Environmental Statement [APP-047] assesses the potential impact of the Scheme upon cycling facilities. There are no on or off road dedicated/marked cycling facilities within immediate vicinity of the Principal Site or Cable Route Corridor. It is acknowledged that there are minor roads within the Order limits that may be attractive to leisure cyclists and that during construction and decommissioning there may be delays to cyclists due to increases in vehicle movements as well as a reduction in pedestrian/cycle amenity. This effect will not be significant.</p> <p>Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043] acknowledges the value of both PRoW and quiet local roads to both residents and visitors as part of the baseline. The Scheme will not result in any permanent loss of green space or recreational facilities. With respect to Stow Parish, visual effects will arise where the Cable Route Corridor crosses Wooden Lane (Bridleway Stow/70/1) but this effect would be temporary during the construction phase and not significant.</p> <p>The Scheme will also be beneficial to users of PRoW as a result of two new permissive paths that are proposed connecting Common Lane with Kexby Road and Northlands Road.</p> <p>The Applicant has undertaken detailed ecological surveys to understand the habitats and species present. Full details of these surveys are provided in Table 9-11 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with further details set out in Appendix 9-1 to 9-12 of the Environmental Statement [APP-081 to APP-094] and [EN010142/APP/6.2(Rev01)].</p> <p>A detailed assessment of the potential impacts of the Scheme on biodiversity is presented in Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with particular reference to Tables 9-14 and 9-15. The Applicant has carefully designed the Scheme to avoid or minimise adverse effects to biodiversity, with substantial measures embedded and detailed in Table 9-13 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040].</p> <p>Measures to protect species and habitats as set out in the Framework CEMP [EN010142/APP/7.8(Rev 01)], Framework OEMP [EN010142/APP/7.9(Rev 01)], Framework DEMP [EN010142/APP/7.10(Rev 01)] and Framework LEMP [EN010142/APP/7.17(Rev 02)] will ensure that the Scheme avoids any likely significant</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>adverse impacts on all important species, habitats and designated sites, and the inclusion of enhancement measures to increase the biodiversity value of the Scheme as an overall benefit. Requirements in the draft DCO [EN010142/APP/3.1(Rev03)] (which must be substantially in accordance with the relevant framework plan) will ensure that the detailed CEMP, OEMP, DEMP and LEMP have to be submitted to and approved by the relevant planning authority prior to the relevant phase of the Scheme and must be implemented in accordance with the approved details thereby securing the protection and enhancement measures.</p> <p>The assessment in Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040] concludes that there will be no significant adverse effects on biodiversity and as a result of the proposed enhancement measures the Scheme will result in significant beneficial effects to broad-leaved woodland, running water, hedgerows and breeding birds. It will also result in beneficial effects to standing water, reptiles and amphibians, non-breeding birds, bats, badger and other mammals as a result of planting in gaps in hedgerow and the creation of new hedgerows, tree planting and conversion of arable land to grassland habitats.</p> <p>As set out in the Biodiversity Net Gain Report [AS-062] the Scheme is predicted to deliver a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units. Requirement 8 of the draft DCO [EN010142/APP/3.1(Rev03)] will secure the delivery of biodiversity net gain through the submission and approval of a biodiversity net gain strategy. This strategy has to be substantially in accordance with the Framework LEMP. The principles of the Framework LEMP will then be secured through the approval of a detailed LEMP, which is required to be substantially in accordance with the Framework LEMP under requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>The outline principles established by the Framework LEMP are incorporated into the Indicative Principal Site Layout Plan (Figure 3-1 Indicative Principal Site Layout Plan of the Environmental Statement [EN010142/APP/6.3(Rev01)]). The Biodiversity Net Gain Report [AS-062] confirms the net gain that will be achieved through implementing the aims and objectives of the Framework LEMP and with this secured through those requirements listed above.</p> <p>Paragraph 8.2.5 of the Framework LEMP [EN010142/APP/7.17(Rev 02)] states that opportunities for advance planting will be explored with landowners, ensuring that this is targeted to mitigate effects on the most sensitive receptors at the earliest opportunity, such as during the construction period. In addition, paragraph 8.2.7 of the Framework LEMP [EN010142/APP/7.17(Rev 02)] states that planting, other than advance planting, will take place in the first available planting season following consent being granted. As noted above, the detailed LEMP will need to be in substantially in accordance with the Framework LEMP secured by requirement 7 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] thereby providing the ability to explore the implementation of advanced planting.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-292	Stow Parish Council	Health and safety impacts due to construction traffic	The negative health and safety impact on residents due to increased volume and size of traffic plus the road closures caused by the Abnormal Loads during the construction phase of both the solar fields and the cable route.	<p>A full and detailed assessment of potential traffic and transport impacts from construction at sensitive receptors has been undertaken within section 16.8 of Chapter 16: Transport and Access of the Environmental Statement [APP-047]. The conclusions indicate that during construction, only one significant residual adverse effect is anticipated on severance, pedestrian delay and non-motorised users' amenity. This is in relation to severance, pedestrian delay (incorporating delay to all non-motorised users) on the B1241 (ATC 23). The significant adverse effect on the B1241 will only occur in the worst-case scenario for a short period of time if activity on the construction of the Cable Route Corridor is concentrated on the B1241 north of Fleets Road (in the order of a couple of weeks). Section 16.8 of Chapter 16: Transport and Access of the Environmental Statement [APP-047] concludes that there are no significant effects during construction with respect to highway impact, driver delay, temporary road closures, and fear and intimidation in relation to the use of PRow or in terms of road safety.</p> <p>Paragraph 11.8.15 of Chapter 11: Human Health of the Environmental Statement [APP-042] also concludes that there will be less than a 30% increase in traffic flows across the majority of local roads, which results in a negligible effect. Where roads are expected to see more than a 30% increase in traffic flow in a worst-case scenario, as discussed in Chapter 16: Transport and Access of the Environmental Statement [APP-047], given the sensitivity of receptors in transport terms and the temporary nature of the construction works, impacts on human health during the construction phase due to impacts on community connectivity and amenity are expected to be minor adverse (not significant), and temporary. Impacts to road safety and accidents were not considered as these have been addressed in section 16.8 of Chapter 16: Transport and Access of the Environmental Statement [APP-047] which concludes that there are no significant effects.</p> <p>Section 7 of the Framework Construction Traffic Management Plan [EN010142/APP/7.11(Rev02)] (Framework CTMP) provides full details of embedded mitigation measures that are proposed to prevent or reduce potential adverse effects associated with construction traffic on local roads. A detailed CTMP (which must substantially accord with the Framework CTMP) will need to be approved post consent prior to construction with the relevant local authorities and this is secured by requirement 14 in Schedule 2 to the draft Development Consent Order [EN010142/APP/3.1(Rev03)].</p> <p>Assessment of the abnormal indivisible loads (AIL) required by the Scheme including proposed vehicle routing, swept path analysis and measures to reduce effects of this transport, is contained within the AIL Management Plan which is provided as Appendix C to the Framework CTMP [EN010142/APP/7.11(Rev02)] submitted with the DCO Application.</p> <p>The Framework CTMP [EN010142/APP/7.11(Rev02)] has been developed to include appropriate access routes for construction vehicles which will minimise the impacts and disturbance to local road users.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-292	Stow Parish Council	Construction traffic in the village	The likely omission of assessing traffic past the local school and through the centre of Stow Village, is not acceptable. We would like to see these facets independently assessed and the assessment published for public scrutiny before any permission is granted for the project to go ahead	<p>As set out in section 16.4 of Chapter 16: Transport and Access of the Environmental Statement [APP-047] the Study Area chosen for the assessment of likely significant effects includes extents of the highway network shown in Figure 16-4: Local Highway Network of the Environmental Statement [APP-047] and the PRoW networks shown in Figure 16-5: Local Public Rights of Way (PRoW) Network of the Environmental Statement [APP-197] which, based on professional judgement and experience of other solar farm DCO submissions, are considered to be potentially at risk from possible direct and indirect impacts arising from the Scheme.</p> <p>Due to the nature of the Scheme, consideration was given to a number of locations within the surrounding highway network which could potentially be impacted due to an increase in traffic as a result of the Scheme, including both the network within the vicinity of the Principal Site as well as the Cable Route Corridor. The B1241 (Willingham Road) to the north of Fleets Road was assessed as Link ATC23 was one of the locations assessed. This includes Stow Village and the local primary school. The sensitivity of the receptor in the assessment accounts for these factors. The effect was assessed as significant adverse. It will only occur in the worst-case scenario for a short period of time if activity on the construction of the Cable Route Corridor is concentrated on the B1241 north of Fleets Road (in the order of a couple of weeks).</p> <p>Chapter 16: Transport and Access of the Environmental Statement [APP-047] and the Transport Assessment contained at Appendix 16-2 of the Environmental Statement [APP-118] has assessed the traffic impact through Stow Village. The Study Area and scope of the Transport Assessment (Appendix 16-2 of the Environmental Statement [APP-118]) related to the Principal Site and the Cable Route Corridor was subject to discussion and agreement with Lincolnshire County Council and Nottinghamshire County Council, as the Local Highway Officers. This is set out in minutes included at Annex A of the Transport Assessment (Appendix 16-2 of the Environmental Statement [APP-118]) and Lincolnshire County Council, in its relevant representation response reiterated that the methodology and assessment of traffic and transport impacts is reasonable and that <i>“there is therefore not expected to be any traffic capacity concerns with regard to the development.”</i></p> <p>The adverse effects upon Stow Village in terms of the B1241 is acknowledged within the assessment. However, this must be considered in the appropriate context with this relating to a worst-case scenario for a short period of time.</p> <p>Development consent was granted for the Cottam Solar Project [EN10133] on 5 September 2024. The Tillbridge Solar Project has been designed in collaboration with the other NSIP solar projects proposed in the area with a common point of connection at the National Grid Cottam Substation to deliver a shared Cable Route Corridor. The use of the B1241 as a construction route was examined by the ExA in relation to the Cottam Solar Project. In his report, the ExA at paragraph 3.10.28 confirmed that:</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p><i>“Accordingly, we are satisfied that the effects arising from construction traffic access, routing and generation would be ably accommodated on the local highway network.”</i></p> <p>In addition, the ExA concluded at paragraph 3.10.37 of the recommendation report that it was satisfied that cumulative effects would be <i>“adequately ameliorated by traffic movements being spread over the highway network, having regard to the access information contained with the Joint Report.”</i></p> <p>The ExA stated that a joint CTMP would provide a firmer conclusion in this matter, but accepted that there would be inherent uncertainties in requiring such a document. The Applicant also intends to enter into a Second Cooperation Agreement with the other Solar Projects. The principles of this Second Cooperation Agreement are agreed and include obligations to manage each Project’s cooperation and management of shared mitigation measures.</p> <p>The SoS in his decision also confirmed at paragraph 4.6 that he agreed with the ExA’s conclusions in relation to transport and access matters attributing neutral weight in the planning balance.</p>
RR-292	Stow Parish Council	Impacts to heritage assets	We are concerned about the risks to a Grade 1 listed scheduled monument, St Mary’s Church and associated artifacts, due to very large and heavy construction traffic planned to pass immediately adjacent to it. The movement of the proposed Abnormal Loads may be feasible dimensionally, but the project should be required to demonstrate to independent experts that there will be no damage to the foundations of the Monument or to those of the houses adjacent to their route.	<p>With regards to impacts on the Site of a college and Benedictine Abbey, St Mary’s Church (NHLE 1012976), the Framework CTMP [EN010142/APP/7.11(Rev 02)] has been updated at paragraph 5.6.33 for Deadline 1 to confirm that AIL manoeuvres adjacent to buildings and existing structures will be monitored by a suitably qualified banksman. The transport route for construction vehicles and abnormal load movements do not propose to utilise Church Lane but will utilise the B1241 Sturton Road / Normanby Road approximately 25m away from St Mary’s Church building. A preliminary AIL assessment has been undertaken by the Tillbridge design team with existing site constraints considered. The AIL vehicles and construction plant passing through Normanby Road / Sturton Road will be positioned to ensure the loading line of influence from the vehicle axles will not undermine / adversely impact the existing retaining wall foundations and associated artifacts. It is standard practice for AIL vehicles to be escorted by both abnormal load escort specialists and the local police with routes meticulously planned in advance of transport movements. A detailed route assessment will be undertaken at detailed design stage of the project. This assessment will include on-site inspections and the assessment of all roadside structures in consultation with the local highway authority. It is standard practice for pre and post condition surveys to be undertaken along the AIL route which will include the retaining wall structure on Normanby Road/Sturton Road supporting the Church yard.</p> <p>The Framework CTMP [EN010142/APP/7.11(Rev 02)] also includes the completion of condition surveys on the road surface and taking preventative measures against damage to the road surface if necessary at paragraph 8.2.17.</p> <p>As explained in National Highways guidance (LA111 Noise and Vibration) (Ref 1-32), a maintained road surface free of irregularities will not have the potential to lead to significant effects from traffic induced vibration, so no impacts on the church and the retaining wall from vibration from construction traffic are expected.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				As such, no significant effects on the Site of a college and Benedictine Abbey, St Mary's Church (NHLE 1012976) are considered likely.
RR-292	Stow Parish Council	Access	The adoption of our very reasonable request for walker access to one or both banks of the River Till bank, to link together existing walking routes	The route of the proposed footpath mentioned in this relevant representation lies outside the Scheme's Order limits and is therefore not within the control of the Applicant.
RR-292	Stow Parish Council	Damage to heritage assets	The developer appears silent on their financial liability for any damage to listed monuments and dwellings during the lifetime of the project, together with financial compensation for those individuals negatively impacted by the project and its construction.	<p>The Applicant is not proposing compensation or payment to those living or working outside of the Order limits for disturbance caused by the Scheme. The Applicant has carried out an Environmental Impact Assessment as required by law, the results of which related to heritage are detailed in Chapter 8: Cultural Heritage of the Environmental Statement [APP-039] and its related appendices. Where the Environmental Statement has identified significant effects, the Applicant has sought to mitigate these where practicable and to minimise residual effects. Such measures include proposed planting, traffic management measures and restrictions on construction working hours. Further details of the Applicant's mitigation proposals can be found in the management plans submitted with the DCO Application: the Framework CEMP [EN010142/APP/7.8(Rev 01)], the Framework CTMP [EN010142/APP/7.11(Rev 02)], the Framework LEMP [EN010142/APP/7.17(Rev 02)], the Framework OEMP [EN010142/APP/7.9(Rev 01)] and the Framework DEMP [EN010142/APP/7.10(Rev 01)]. Requirements within Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] will require the approval of a CEMP, CTMP, LEMP, OEMP and DEMP that are substantially in accordance with the Framework management plans forming part of the DCO application. The requirements will ensure that the Scheme is implemented in accordance with the approved management plans. With these measures in place, the Applicant does not believe any compensation payments to be necessary.</p> <p>With respect to damage or destruction to Scheduled Monuments, such damage may amount to a criminal offence, which can lead to a fine and/or imprisonment. Should damage occur to a Scheduled Monument, then Historic England would be contacted immediately, as well as the diocese, to determine next steps.</p> <p>The Applicant does recognise that the construction and operation of large-scale infrastructure projects such as the Scheme can be disruptive to communities and is therefore proposing a package of community benefits should the Scheme receive development consent. The Applicant intends for this package to be administered through a partnership with the Lincolnshire and Nottinghamshire community foundations.</p>
RR-292	Stow Parish Council	Community Benefit Fund	We seek clarity on what community financial benefit will be offered should any of the proposals proceed. If all the above points were resolved to Stow Parish Council's satisfaction, we would potentially support the project.	The Applicant is proposing a package of community benefits should the Scheme receive development consent. The Applicant intends for this package to be administered through a partnership with the Lincolnshire and Nottinghamshire community foundations. The quantum and terms of this package will be set and publicised closer to the time of construction (should the Scheme receive development consent).

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-095	Fillingham Parish Meeting	Scale of the Scheme	1 Fillingham Parish Meeting is against the proposed Tillbridge Solar Project, because the damaging consequences of development at this scale can never be mitigated – and the benefits of this development are severely limited.	<p>The Government has identified through its energy policy, most recently in the Overarching National Policy Statement for Energy EN-1 and National Policy Statement for Renewable Energy EN-3, that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p> <p>The Applicant acknowledges that the Scheme would have some adverse impacts and these are set out in the relevant chapters and appendices of the ES. A summary of environmental effects is found within Chapter 19: Summary of Significant Environmental Effects of the Environmental Statement [APP-050]. Overall, with appropriate mitigation implemented, this identifies a relatively limited number of residual, significant adverse effects on landscape and visual, transport, and noise. When considered relative to the large-scale nature of the Scheme these effects are considered to be relatively limited and outweighed by the significant national benefits that the Scheme will provide by providing much needed large scale renewable energy generation, and more localised benefits as set out below.</p> <p>Section 5.3 of the Planning Statement [AS-029] sets out the benefits of the Scheme. Along with contributing to a sufficient, reliable and affordable energy system whilst helping the government decarbonise, and meet national climate change targets and budgets, the Scheme provides a number of other benefits which are set out below.</p> <p>Electricity Generation – Over the 60-year lifetime of the Scheme, it would generate enough electricity to power approximately 299,383 homes per annum based on Ofgem data. This is a significant increase in electricity generation with recognition that more electricity generation is needed to meet demand.</p> <p>Decarbonisation – The Scheme indicates an overall lifetime carbon reduction, relative to the counterfactual Combined Cycle Gas Turbine (CCGT), of over 15 million tCO₂e. The use of the BESS also provides the opportunity for additional carbon savings, as set out in paragraph 7.8.27 of Chapter 7: Climate Change of the Environmental Statement [APP-038]. The overall greenhouse gas impact of the Scheme is therefore significantly beneficial and the Scheme will play a vital part in achieving the rate of transition required by nationally set policy commitments and supporting the trajectory towards net zero.</p> <p>Environmental Benefits – The Scheme would provide a number of environmental and ecological enhancements and has been designed to avoid key nature conservation and ecological features present within or adjacent to the Order limits. These measures are set out in section 7 of the Framework LEMP [EN010142/APP/7.17(Rev02)]. In addition to avoidance measures, existing vegetation and habitats will be retained and enhanced, to protect existing wildlife corridors and retain and improve connectivity and valuable habitats. The Scheme will meet a minimum 10% BNG as established through the Framework LEMP [EN010142/APP/7.17(Rev02)]. Requirements (7) and (8) of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] will ensure that the BNG is</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>delivered through the LEMP needing to be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] and the submission and approval of a biodiversity net gain strategy that is also in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)]. The Framework LEMP demonstrates that the Scheme has the potential to achieve significant biodiversity net gain on site prior to this being a mandatory requirement through The Environment Act for NSIPs.</p> <p>Permissive Paths – Two new permissive paths would be included within the Scheme, offering recreational access in an area where PRowS are limited, having a beneficial impact on health and wellbeing. The routes can be seen on the Indicative Principal Site Layout Plan [APP-128].</p> <p>Economic Benefits – The Scheme will support, on average, 914 total net jobs per annum during construction. Of these, 138 jobs per annum are expected to be taken up by residents within a 60-minute drive time area, and 776 by people outside this area. It is estimated that during construction the Project will annually contribute approximately £52.3 million of Gross Direct Value Added through construction related employment, of which approximately £7.9 million is expected to be generated within the West Lindsey and Bassetlaw districts, and £44.4 million is expected to be generated within the East Midlands as a whole. During operation, the Principal Site will provide 11 jobs, which will offset the loss of 10 agricultural jobs resulting from the Scheme. The Framework Skills, Supply Chain and Employment Plan (SSCEP) [APP-232], submitted as part of the Application, would, once implemented in full post-consent, deliver additional positive outcomes in terms of employment. This includes the Applicant seeking to maximise opportunities for investing in skills locally, local supply chain and businesses that can support the development of the Scheme and other solar projects in the area. With specific regard to the Scheme's supply chain, the Framework SSCEP [APP-232] highlights the following opportunities:</p> <ul style="list-style-type: none"> • Opportunity 4 - The Applicant would investigate measures to promote take up of jobs generated by the Scheme by local people. The starting point will be engagement with Local Authorities and Job Centre Plus, in order to tap into existing local employment support networks. • Opportunity 5 - The Applicant would introduce initiatives to maximise the diversity of the workforce. This measure could relate to a variety of demographic or disadvantaged groups. The most appropriate target group(s) could be identified through consultation and research post-consent of the DCO. • Opportunity 6 – maximising opportunities for local businesses for purchasing and contracts arising from the Scheme <p>The Applicant is also proposing a community benefits package as part of the Scheme. The intention is that this will be delivered in cooperation with the Lincolnshire and Nottinghamshire community foundations.</p>
RR-095	Fillingham Parish Meeting	Adequacy of consultation	2 The Public Consultation has been insufficient and inadequate as to be ineffective and the level of general understanding in the community of the scale and impact of the schemes remains very	The Applicant carried out both non-statutory and statutory consultation, in accordance with the Planning Act 2008 ("PA 2008").

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			low. Images of typical low-level or rooftop solar development included in the developers material are misleading and not representative of the proposed development.	<p>The Applicant sought to engage in the early stages of the Scheme to introduce the Scheme to stakeholders holding public exhibitions and offering/holding meetings with key stakeholders.</p> <p>The Applicant also sought to provide accurate descriptions and visualisations of the Scheme, including detailed information during the statutory consultation (alongside more technical information). The details of the consultation carried out as part of the Scheme is set out in the Consultation Report [APP-021] and Consultation Report Appendices [APP-022 – APP-030].</p> <p>The Scheme was accepted for examination by The Planning Inspectorate on the 8 May 2024. This confirms that the Scheme undertook adequate consultation in accordance with section 55(4) the PA 2008.</p> <p>The Preliminary Environmental Information (PEI) Report was published as part of the statutory consultation and was available online through the Scheme website and at in person public consultation events. Chapter 3: Scheme Description of the PEI Report sets out the components of the Scheme including a description of the solar PV panels. Plates 3-1 and 3-2 of Chapter 3: Scheme Description of the PEI Report included an illustrative image of solar panels and trackers and an illustration of the proposed single axis trackers and Table 3-1 set out details of the minimum and maximum parameters (heights) of the proposed single axis tracker panels. These details are representative of the Scheme.</p>
RR-095	Fillingham Parish Meeting	Scale of the Scheme and visual impacts	3 The scale of the Tillbridge Solar Project would change the visual aspect and character of the region, which would undoubtedly be dominated by solar fields – at 3.5m panels could never be adequately screened by hedgerows (at all) or by trees (for many years), ruining much loved views, walks and historic landscapes.	<p>The Applicant acknowledges that the operation of the Scheme will result in a residual significant adverse effect (at the Year 15 stage when planting is considered to be sufficiently mature) on Local Landscape Character LLCA 3A Till Vale across the Principal Site, alongside a small number of representative viewpoints that reflect visual and recreational receptors, as presented in Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043].</p> <p>The single axis tracker panels have a maximum height above ground level of 3.5m high when at maximum tilt but as the tracker panels move east to west this height reduces to 2.5m in height when the panel lies horizontal. The maximum height of each string of PV is set out in Table 3-3 and illustrated on Plate 3-3 of Chapter 3: Scheme Description of the Environmental Statement [AS-053].</p> <p>Hedges will be managed at between 2 and 3 metres height, as stated in the Framework LEMP [EN010142/APP/7.17(Rev02)]. Taller heights will be prescribed alongside routes such as roads through the Principal Site; details such as this will be confirmed through the final LEMP to be secured by requirement 7 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. The effect of a 2m high hedge is demonstrated in the representative viewpoint 5 (Common Lane), where the existing minimum c.2m high hedge is considered sufficient to screen the solar infrastructure, even during the winter months. These expected tree heights are conservative and reflect worst-case scenarios. Arboricultural research indicates that trees in conditions such as those expected within the Principal Site will attain heights of approximately 7m to 7.5m after 15 years and</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-095	Fillingham Parish Meeting	Cumulative effects	4 The unprecedented situation of the four (or more) massive NSIP solar projects within such a close area means that to properly understand the implications on the region, all the projects should be considered together by the Planning Inspectorate, i.e. Cottam Solar Project, West Burton Solar Project, Gate Burton Energy and Tillbridge Solar.	<p>those for species such as alder and poplar will be greater. Although the Applicant acknowledges that significant residual visual effects will arise where views are available from elevated locations on the Cliff, it is considered that for the hedge heights proposed, mitigation (when mature) from lower-level locations will limit views ensuring screening by hedges and trees will be more than adequate to screen the solar infrastructure.</p> <p>The Applicant has designed the Scheme to ensure landscape and visual impacts are minimised as far as practicable by proposing a comprehensive landscape and ecological design. This design includes new hedgerows, trees, woodland and species-rich meadows that will provide green infrastructure and improve habitats and their connectivity within and around the Principal Site. With respect to the Fillingham area, no views are expected from the bridleway (Fill/88/1) to Glentworth (reference Viewpoint 6 in the LVIA); and no significant visual effects are expected for Viewpoint 26 and 27 along the bridleway (Fill/85/2) north of Willingham Road. The design is described in the Design and Access Statement [AS-031] and in the Framework LEMP [EN010142/APP/7.17(Rev02)]. The detailed LEMP will need to be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] as secured by requirement 7 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. The Framework LEMP includes the design principles associated with the provision of green infrastructure illustrated on the Indicative Landscape Masterplan [AS-064]. The detailed design of the Scheme will therefore need to generally adhere to these principles to ensure that the environmental effects remain the same as reported in the ES.</p> <p>The Applicant agrees that the effects of these four projects should be considered together.</p> <p>The assessment of cumulative impacts of the Scheme with other existing and proposed energy developments as well as other developments in the locality is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. The Scheme and other solar DCOs have worked collaboratively during design development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures. Consideration has also been given as to how habitat creations link with other proposed developments and more widely across the landscape.</p> <p>The Applicant acknowledges that there are cumulative effects as a result of the Scheme and other solar schemes in the area; significant cumulative effects have been identified on three landscape character areas and eight representative views during construction and decommissioning however these are temporary and short term, for the duration of the construction period. A temporary significant beneficial effect from the generation of construction employment at a local scale was also identified.</p> <p>Whilst the Applicant has minimised visual impacts as far as practicable, as explained above, the Scheme (along with other solar schemes) would also result in significant cumulative effects on Local Landscape Character Area 3A Till Vale at year 15 of operation, and two significant visual effects at Viewpoint 7 on the B1398 Middle Street,</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>Glentworth Cliff Farm and Viewpoint 13 at public footpath (Hems/787/2) on Lincoln Cliff, Hemswell at year 15 of operation. All other cumulative effects have been assessed as not significant. Cumulative landscape and visual impacts will be managed in accordance with the relevant environmental management plans, including the Framework LEMP [EN010142/APP/7.17(Rcv02)]</p> <p>Further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is provided in the Joint Report on the Interrelationship with other National Infrastructure projects [APP-215 to APP-217].</p> <p>Each development consent order will be considered on its own merits by the ExA who will make a recommendation to the SoS on whether development consent should be granted or refused. Development consent has been granted for the Gate Burton Energy Park [EN10131] and the Cottam Solar Project [EN10133]. A decision on the West Burton Solar Project is due on 8 November 2024. Whilst each of the projects cannot be considered together, each project has considered the cumulative effect of each project in combination with the other.</p> <p>Since the Gate Burton Energy Park [EN10131] and the Cottam Solar Project [EN10133] have obtained development consent, the ExA has already examined cumulative effects of the four solar projects and the SoS has considered the ExA recommendations. With respect to the Gate Burton Energy Park, the SoS at paragraph 4.89 agreed with that the methodology used to consider cumulative effects taking into account the worst-case scenario and that there are two significant cumulative effects identified on landscape and visual receptors. At paragraph 3.14.20 of the ExA's report, it was concluded that:</p> <p style="padding-left: 40px;"><i>“Overall and I am satisfied that the combination of both effect interactions and cumulative effects between the short list of schemes in the locality have been taken into account in reaching my conclusions. The Applicant has sought to introduce collaboration with the developers of the other solar NSIP schemes, not least through the shared GCC which also facilitates shared communication and consultation potential and has sought to embed the potential for further collaboration in the fCTMP. Whilst there may be some effect interactions that would occur, for example, landscape and visual amenity and noise and vibration, I am satisfied that there are no significant effects from effect interactions between differing effects on receptors, such that would increase the intensity and magnitude of effect. I agree with the Applicant's conclusions of the assessment of cumulative effects where two significant cumulative effects are identified on landscape and visual receptors.”</i></p> <p>In applying the planning balance, the ExA at paragraph 5.3.13 concludes that <i>“none of the matters which I have weighed against the Order being made, either in isolation or in combination, outweigh the significant benefits that I have identified.”</i></p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>The Cottam Solar Project Environmental Statement Chapter 23 identified significant cumulative effects after embedded mitigation and mitigation measures have been applied with the ExA concluding on cumulative matters at paragraphs 3.13.30 of the recommendation report that:</p> <p><i>“We are satisfied that the Applicant has adequately assessed the likely significant effects of the Proposed Development cumulatively with other planned development and that the Environmental Statement includes sufficient information on how the effects of the proposal would combine and interact with the effects of other development during construction, operation and decommissioning. Accordingly, we are satisfied that the requirements of the EIA Regulations, 2011 NPS EN-1 and 2024 NPS EN-1 are met.”</i></p> <p>The SoS confirmed at paragraph 7.3 of his decision that he agreed with the ExA’s conclusions in respect of cumulative effects and that despite these impacts that the benefits of the Proposed Development outweigh its adverse impacts. The SoS goes on to state at paragraph 7.6 of his decision that:</p> <p><i>“The Secretary of State does not believe that the national need for the Proposed Development as set out in the relevant NPSs is outweighed by the Development’s potential adverse impacts,”</i></p> <p>Against the context above, the Planning Statement [AS-029] submitted in support of the Tillbridge Solar Project confirms at paragraph 7.4.34 that significant landscape and visual cumulative effects remain when the Tillbridge Solar Project is considered in combination with the other solar NSIPs. Whilst each development consent will be considered on its merits, in applying the overall planning balance, the recent approval of development consent for the Gate Burton Energy Park and the Cottam Solar Project are important and relevant in the consideration of the Tillbridge Solar Project. All three projects, either through ratification by the SoS in relation to the made DCOs or through the technical work submitted in support of the Tillbridge Solar Project agree that there are cumulative effects that attach negative weight. However, the made development consents agree that despite this negative weight, the benefits of the Proposed Developments are not outweighed by the adverse impacts confirming that development consent should be granted in both cases. In the case of the Tillbridge Solar Project, the primary policy consideration is its compliance with the designated Energy NPS. Given the critical national priority (CNP) to provide low carbon infrastructure, which includes the deployment of large-scale ground mounted solar, NPS EN1 (Ref 1-17) is clear at paragraph 4.2.15 that <i>“all but the most exceptional circumstances, it is unlikely that consent will be refused.”</i></p>
RR-095	Fillingham Parish Meeting	Scale of the project and environmental impacts	5 FPM is concerned that the scale of the Tillbridge Solar Project will have a massively harmful impact on the health and wellbeing of residents, in particular their mental health, by removing visual amenity, changing views, and causing stress by destroying agricultural jobs and livelihoods, harming facilities, as	The Applicant recognises that the potential for future environmental changes associated with the Scheme during construction, operation and decommissioning are currently a source of concern for some local residents. To address this concern, the Applicant has undertaken a comprehensive and robust Environmental Impact Assessment so that any likely significant effects of the Scheme have been able to be identified and mitigated.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>well as disruption during construction and decommissioning. In return, the scheme offers the community nothing.</p>	<p>Chapter 11: Human Health of the Environmental Statement [APP-042] assesses potential effects of the Scheme on health and wellbeing of local residents. The assessment takes a holistic approach to health and considers a wide range of health determinants which are relevant to quality of life and amenity. The assessment considers elements of the Scheme which could affect mental health (for example changes in landscape and visual amenity, noise, access to open space and employment) as well as physical health (for example associated with air pollution and access to healthcare facilities). No significant adverse effects are identified with regards to human health.</p> <p>The Application is also supported by an Equality Impact Assessment (EqIA) [APP-227]. The EqIA assesses how the Scheme may therefore impact on the health and well-being of protected characteristic groups. It assesses the potential direct and indirect impacts of the Scheme on groups with protected characteristics as defined by the Equality Act 2010 (Ref 1-33). It acknowledges that during construction increased traffic movements have the potential to disproportionality affect some protected characteristic groups, including older and disabled people. It is recognised that noise, vibration, and air qualities could also affect these groups. During operation of the Scheme potential impacts include negative effects of increased noise on protected characteristic groups such as disabled people.</p> <p>The implementation of Construction, Operation, and Decommissioning Environmental Management Plans (CEMP, OEMP, and DEMP respectively) containing mitigation measures provide a clear and consistent approach to controlling Scheme activities, and therefore will support reduction of potential negative equality effects. A Framework CEMP [EN010142/APP/7.8(Rev01)], Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] have been submitted alongside the DCO Application, and the final CEMP, OEMP and DEMP must be in substantial accordance with these framework plans in accordance with requirements 12, 13 and 20, respectively, of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. Continued and sensitive engagement with affected individuals with protected characteristics will continue throughout the examination, detailed design, pre-construction, construction, operation and decommissioning stages of the Scheme. This will be secured through requirement 4 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] which requires the establishment of a community liaison group prior to the commencement of development. This will provide a forum in which to manage impacts upon the local community including those with protected characteristics as well as all residents.</p> <p>As noted above, the Applicant acknowledges that the operation of the Scheme will result in a residual significant adverse effect (at the Year 15 stage, when planting is considered to be sufficiently mature) upon Local Landscape Character LLCA 3A Till Vale and a small number of representative viewpoints that reflect visual and recreational receptors, as presented in Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043]. As also noted, the Applicant has designed the Scheme in consultation with stakeholders to minimise effects through early-stage design development and a comprehensive landscape and ecological design. The former includes highlighting the more sensitive landscapes surrounding Fillingham such as the</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>Lake and views associated with the Castle. These design elements are discussed in the Design and Access Statement [AS-031] and in the Framework LEMP [EN010142/APP/7.17(Rev02)]. The detailed LEMP will need to be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] as secured by requirement 7 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. The Framework LEMP includes the design principles associated with the provision of green infrastructure illustrated on the Indicative Landscape Masterplan [AS-064]. The detailed design of the Scheme will therefore need to accord with these principles to ensure that the environmental effects remain the same as reported in the ES.</p> <p>The Scheme has sought to avoid proximity to villages and residential properties in line with the provisions of NPS EN-3 (Ref 1-18). Buffers from residential properties of at least 30 m have been incorporated into the Scheme and the landscape design has sought to minimise any potential impacts on residential amenity as a result of the Scheme. More extensive buffers have been used within key views from residential properties. More information is provided in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035], Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043] the Design and Access Statement [AS-031] and Table 1 of the Outline Design Principles Statement [AS-058].</p> <p>The Scheme has, where possible, aimed to be set back from residential dwellings and incorporate landscape mitigation and layout design measures to reduce the impact on residential dwellings. The design also incorporates buffers from residential properties to the solar PV infrastructure which are shown on Figure 3-1 of the Environmental Statement [EN010142/APP/6.3(Rev01)] and the design commits to positioning noise emitting BESS and Solar Stations at least 250 m away from any residential property.</p> <p>Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], undertakes an assessment of the Scheme in relation to farming circumstances and explains that several separate farm businesses occupy land within the Principal Site. It concludes that during construction the land will not be available for grazing livestock or equestrian use, resulting in a temporary and negligible effect on farming circumstances, which is not significant. During operation, the Scheme's occupation of landowners' land, as a new diversified enterprise, will provide a new income stream independent of variations in profitability of arable production. This diversified enterprise may also enable managers of farm businesses that are currently too small to be economically viable to wind up the farm business. This is assessed to result in a temporary moderate beneficial effect, which is significant.</p> <p>In addition, during the operation and maintenance of the Scheme, a gross number of 10 jobs will be created. At present, there are around 10 existing jobs supported by the agricultural use of the Principal Site. Therefore, the total net employment of the Scheme will be zero, with the Scheme providing the same number of jobs as the existing use of the Principal Site with no effect arising from operational employment opportunities.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-095	Fillingham Parish Meeting	Scale of development and impacts on Fillingham Village	6 As a small, rural community, Fillingham has few opportunities for employment and very few amenities – one of its few attractions is the open countryside landscape that it sits in. The scale of the development would deny the village of this one key attribute and erode the attractiveness of the village and therefore the village's capacity to sustain itself; driving some people away and serving to deter people from moving in – the village could die	<p>In terms of disruption during the construction and operational phase and in recognition of the potential for impacts on mental health that could arise from activities on site, and surroundings, there are measures set out in the Framework CEMP [EN01042/APP/7.8(Rev 01)], Framework OEMP [EN010142/APP/7.9(Rev 01)] and Framework DEMP [EN010142/APP/7.10(Rev 01)] to reduce or avoid human health and wellbeing related impacts during the construction and operational phase, respectively. Detailed management plans will need to be approved prior to construction by the relevant local authorities. These detailed management plans must substantially accord with the framework management plans and this is secured by relevant requirements in Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)] relating to the preparation and approval of the detailed management plans.</p> <p>Additionally, further details with respect to specific embedded mitigation measures relevant to minimising amenity impacts associated with traffic, noise and air quality are set out in Chapter 6: Air Quality of the Environmental Statement [APP-037], Chapter 13: Noise and Vibration of the Environmental Statement [AS-006] and Chapter 16: Transport and Access of this Environmental Statement [APP-047]. This includes in respect of potential impacts on mental health.</p> <p>The Applicant will work with the Local Authorities to ensure that the local community is affected as little as possible, whether that be targeting contractors with social value commitments during construction or wider community benefit initiatives.</p> <p>Section 5.3 of the Planning Statement [AS-029] sets out the benefits of the Scheme. Along with contributing to a sufficient, reliable and affordable energy system whilst helping the government decarbonise, and meet national climate change targets and budgets, the Scheme provides a number of other benefits. These include electricity generation to power approximately 299,383 homes per annum based on Ofgem data, decarbonisation, environmental benefits and enhancements meeting a minimum of 10% biodiversity net gain, the inclusion of two new permissive paths, and the provision of jobs during the construction and decommissioning phases contributing to the local economy. These benefits will lead to positive effects on human health, including both physical and mental health.</p> <p>The Applicant is also proposing a community benefits package as part of the Scheme. The intention is that this will be delivered in cooperation with the Lincolnshire and Nottinghamshire community foundations</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-095	Fillingham Parish Meeting	Impacts on PRow in and around Fillingham	7 For many people living in and around Fillingham, the local network of footpaths, roads and bridleways provides their routes for recreation and exercise, such as cycling, walking, running and horse-riding – and the benefit of being in the fresh air, surrounded by greenery. Such benefit will be lost through the extensive development of the Tillbridge Solar Project.	<p>the proposed landscape and ecological design of the Scheme, which increases connectivity through the landscape, with the inclusion of buffers to sensitive features and properties and the creation of new green infrastructure to provide screening and enhance the landscape condition as described in the Design and Access Statement [AS-031] and in the Framework LEMP [EN010142/APP/7.17(Rev02)]. The detailed LEMP will need to be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] as secured by requirement 7 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. The Framework LEMP includes the design principles associated with the provision of green infrastructure illustrated on the Indicative Landscape Masterplan [AS-064]. The detailed design of the Scheme will therefore need to accord with these principles to ensure that the environmental effects remain the same as reported in the ES.</p> <p>When viewed from the Cliff, the Scheme does not intrude above the skyline or disrupt views with vertical elements; and it will not result in overshadowing or give rise to significant noise or movement, therefore the identified significant visual effects will not result in adverse effects on residential visual amenity.</p> <p>Regarding effects on amenity, Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] assesses the impact of the Scheme on Local Land Use and Amenity. The chapter finds that, taking into account the residual effect assessment results of the air quality, noise, traffic and visual assessments, there are no residents, businesses or community facilities that would likely experience a significant effect on their amenity during construction, operation and decommissioning from in-combination effects.</p>
RR-095	Fillingham Parish Meeting	Impacts on agricultural employment	8 There are few employment opportunities within the immediate area of Fillingham, but the Tillbridge Solar Project will adversely impact agricultural jobs and provide few opportunities for livelihoods in their place.	<p>Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] assessed impacts on PRow users. The assessments concluded that there would be no significant effects on these receptors that would require mitigation.</p> <p>In addition, Chapter 14 concludes that in the operational phase there will be minor beneficial effects on PRow. In the Order limits there will be two new permissive paths connecting Common Lane with Kexby Road and Northlands Road. This route will provide a safe and direct pathway within the Principal Site, which connects with the existing PRow network and enhances north-south connectivity from existing PRow from the Fillingham area. This results in a minor beneficial (not significant) effect for users.</p> <p>The Scheme will create opportunities for the local economy and employment during construction and create job opportunities in the operational phase to offset the loss of agricultural jobs.</p> <p>As set out in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045], in the operational phase, an estimated 11 gross additional jobs will be created by the Scheme, and the Principal Site currently supports 10 gross jobs through agricultural activities. The total net employment effect is 0 jobs in the operational phase as a result. This demonstrates that there will not be an adverse but a neutral impact.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>In the construction and decommissioning phases, the impact of construction employment generation on the local economy has been assessed to be a minor beneficial (not significant) effect at the local scale.</p> <p>In respect of supporting livelihoods, the Framework Skills, Supply Chain and Employment Plan (SSCEP) [APP-232] would, once implemented in full post-consent, deliver additional positive outcomes, particularly during construction. This includes the Applicant seeking to maximise opportunities for investing in local supply chain and businesses that can support the development of the Scheme and other solar projects in the area.</p> <p>The Framework SSCEP forms a basis for which positive outcomes and mitigation can be delivered, for taking forward further in a full SSCEP to be developed and agreed with the LPAs, other key local stakeholders, and the community as necessary in advance of construction of the Scheme commencing. The detailed SSCEP will be secured by Requirement 19 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] with no part of the authorised development permitted to commence unless the full SSCEP has been approved. The detailed SSCEP has to be substantially in accordance with the Framework SSCEP and the requirement prescribes that the plan must identify opportunities for individuals and businesses to access employment, skills and supply chain opportunities associated with that part of the authorised development and the means for publicising such opportunities. The securing mechanisms provided by the requirement will ensure that positive benefits are achieved with respect to skills and employment associated with the Scheme.</p> <p>The Applicant has stated a general aspiration to involve local businesses and contractors as far as practicable during the construction phase. A supply chain event would be held prior to the start of construction to help identify local businesses and contractors with relevant capabilities. In addition, the Applicant is in discussions with Nottinghamshire and Lincolnshire Community Forums regarding wider community benefits.</p>
RR-095	Fillingham Parish Meeting	Historic character of Fillingham	9 Fillingham is part of an area of villages and agriculture that with a long history. Fillingham St Andrew's church is referenced in the Domesday Book. The long heritage and character of the area would be shattered by development at the scale of the Tillbridge Solar Project and other NSIP solar developments.	Fillingham Conservation Area, and the heritage assets within it, were assessed in the Cultural Heritage DBA (Appendix 8-2 of the Environmental Statement [APP-059]). It was concluded that the landscape within the Principal Site makes no contribution to the setting or significance of these designated assets, with views towards the proposed site screened by vegetation and topography. They were scoped out of further assessment in Chapter 8: Cultural Heritage of the Environmental Statement [APP-039] . Cumulative impacts are set out in Chapter 18: Cumulative Effects and Interactions, Section 18.9 of the Environmental Statement [APP-049] and have been agreed insofar as they relate to heritage with Historic England including listed buildings at Fillingham.
RR-095	Fillingham Parish Meeting	Lifetime of the Scheme	10 Use of the technical definition of "temporary" hides the nature of the project. Between construction, operation and decommissioning, a life cycle of c. 60-70 years does not reasonably constitute "temporary" in a human lifetime. The developer should be	The Applicant appreciates that 60 years will not feel "temporary" for many people, however, from an environmental, land use and planning perspective, the use is considered temporary (as well as long term), which has been confirmed in the recent

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>consistent and honest with the public about the lifetime of the scheme.</p>	<p>decisions of the Secretary of State in relation to the Cottam Solar Project and the Gate Burton Energy Park.</p> <p>The vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following decommissioning of the Scheme. Decommissioning of the Scheme after 60 years is required and secured by requirement 20 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]). The Scheme is therefore a long-term temporary use for the purposes of the Examining Authority and Secretary of State's consideration of its impacts.</p> <p>Paragraph 2.10.65 and 2.10.66 of NPS EN-3 (Ref 1-18) refer to the project lifetime of solar schemes. Paragraph 2.10.66 states that:</p> <p><i>“Time limited consent, where granted, is described as temporary because there is a finite period for which it exists, after which the project would cease to have consent and therefore must seek to extend the period of consent or be decommissioned and removed.”</i></p> <p>Time-limited consents, such as that proposed to limit the duration of the operation of the Tillbridge Solar Project, mean that the Scheme has to cease, is decommissioned and removed. NPS EN-1 (Ref 1-17) does not contain an upper limit and the Environmental Statement considers the environmental effects of the Scheme over this period.</p> <p>The Secretary of State's decision on the recently approved Gate Burton Energy Park supported the 60-year time period of this Scheme stating at paragraph 7.2.11 that the impacts are acceptable and the benefits outweigh the disbenefits including having regard to the need and significant benefit derived from the low carbon energy generation. The Secretary of State confirms that:</p> <p><i>“Overall, therefore I am satisfied with the time limit as introduced to Requirement 19 and indeed see it as a necessary and important control, given that the Environmental Statement has only assessed this period and any longer would require further consideration at a future date if necessary.”</i></p> <p>The made development consent in relation to the Cottam Solar Project is also time limited to 60 years.</p>
RR-095	Fillingham Parish Meeting	Impacts on habitats	<p>11 Existing habitats rich with birds of prey, owls and scarce farmland species, plus deer, brown hares and badgers which will be disturbed through the massive scale of construction activities and material movements the Tillbridge Solar Project will require and be impacted through the project's operational lifetime and decommissioning.</p>	<p>The Applicant has undertaken detailed ecological surveys to understand the habitats and species present. Full details of these surveys are provided in Table 9-11 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with further details set out in Appendices 9-1 to 9-12 of the Environmental Statement [APP-081 to APP-094].</p> <p>A detailed assessment of the potential impacts of the Scheme on biodiversity is presented in Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with particular reference to Tables 9-14 and 9-15. The Applicant has carefully designed the Scheme to avoid or minimise adverse effects to biodiversity,</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-095	Fillingham Parish Meeting	Flood risk impacts	12 There is a real risk for a significant increase in water run-off from the huge surface area of solar panels, leading to increased risk of flooding, damage and isolation of properties and communities.	<p>with substantial measures embedded and detailed in Table 9-13 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040].</p> <p>The assessment in Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040] concludes that there will be no significant adverse effects on biodiversity, with significant beneficial effects to a variety of habitats, including broad-leaved woodland, running water, hedgerows and species, including breeding birds, particularly farmland birds associated with hedgerows and field margins.</p> <p>The Scheme would provide a number of environmental and ecological enhancements and has been designed to avoid key nature conservation and ecological features present within or adjacent to the Order limits. These measures are set out in the Framework LEMP [EN010142/APP/7.17(Rev02)]. In addition to avoidance measures, existing vegetation and habitats will be retained and enhanced, to protect existing wildlife corridors and retain and improve connectivity and valuable habitats. The Scheme will also achieve a minimum 10% BNG prior to this becoming a mandatory requirement for NSIPs. The Applicant's commitment to delivering a minimum of 10% BNG is secured by both requirements 7 (landscape and ecological management plan) and 8 (biodiversity net gain) of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. Requirement 8 provides that construction cannot commence until a BNG strategy has been submitted and approved by the relevant planning authority, in consultation with the relevant statutory nature conservation body (being Natural England). The BNG strategy must be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)], which states at paragraph 4.6.2 that the Applicant is committed to achieving a minimum of 10% BNG, in accordance with the terms of the Biodiversity Net Gain Report [AS-062].</p> <p>Appendix 10.4 of the Environmental Statement (Outline Drainage Strategy) [APP-098] has been prepared in accordance with national and local policies. The Outline Drainage Strategy proposes measures for the Scheme to mimic the existing natural surface water runoff regime, limiting surface water runoff to greenfield rates, and providing attenuation, where required, for the 1 in 100 year plus 40% climate change event. To prevent potential soil erosion in areas between the solar panels, the Outline Drainage Strategy proposes to plant these areas with native grasslands and wildflower mixes to slow water runoff and mitigate potential erosion. New access roads will be permeable, in accordance with paragraph 2.10.85 of NPS EN-3 (Ref 1-18).</p> <p>The Scheme has assessed in detail the drainage and run off impacts of the conversion of the Principal Site from arable farmland to solar panels in Chapter 10: Water Environment of the Environmental Statement [APP-041]. The assessment concludes that the effect from operational site runoff on the water quality of surface water features and groundwater is not significant.</p> <p>Requirement 5 of Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)] relates to detailed design. This confirms that the detailed design must accord with the Outline Drainage Strategy. This will ensure that these measures are applied and that there is no</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				risk of an increase in water run-off from the Scheme nor an increase by the Scheme in the risk of flooding elsewhere.
RR-095	Fillingham Parish Meeting	Construction and decommissioning traffic	13 The largest road near Fillingham is a "B" road, and most others are single-track roads, which are wholly unsuitable to the large volumes of traffic movements necessary to construct, service, maintain and decommission the Tillbridge Solar Project.	As shown in the Framework CTMP [EN010142/APP/7.11(Rev 02)] , the road through Fillingham is not proposed to be used as an access route to the Principal Site or Cable Route Corridor.
RR-095	Fillingham Parish Meeting	Battery safety risks	14 The fire safety and environmental risk arising from the failure of batteries is a concern, including how community safety and environmental integrity of wildlife and water systems would be ensured in an emergency.	<p>The Applicant has sought to address concerns raised about BESS through significant embedded mitigation incorporated in the design and management of the BESS by the Scheme.</p> <p>This includes design parameters secured by the Outline Design Principles Statement [AS-058] limiting the maximum number of BESS stations co-located with Solar Stations spread across the Principal Site, provision of two additional emergency access points during operation (SRowA Plan [EN010142/APP/2.4(Rev03)]) Access reference 6/01 and 6/04) and BESS to not be located within 250m of a residential property.</p> <p>Appendix 10.4: Outline Drainage Strategy of the Environmental Statement [APP-098] includes outline drainage principles to deal with fire water runoff through the provision of swales underlain with an impermeable liner to prevent contaminants entering the ground and with the inclusion of a design feature to hold and test water before it is released to surrounding water courses, or tankered off-site if polluted.</p> <p>Requirement 5 of Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)] relates to detailed design. This confirms that the detailed design must accord with the Outline Drainage Strategy. This will ensure suitable fire water runoff drainage is implemented as part of the Scheme with control measures included to ensure the protection of the environment and wildlife.</p> <p>A Framework Battery Safety Management Plan (FBSMP) [APP-225] has also been prepared with input from local Fire and Rescue Services. This includes framework mitigation and management measures for thermal runaway safety risks posed by the BESS in the Scheme. These mitigation measures will need to be incorporated into the detailed design and form part of the final Battery Safety Management Plan. The final BSMP which will be substantially in accordance with the Framework BSMP [APP-225] will need to be approved by the relevant Local Planning Authority, who will need to consult with the Lincolnshire and Nottinghamshire Fire and Rescue Services prior to the approval of the BSMP. Any construction work will need to be carried out and implemented in accordance with the final approved BSMP, and this is secured through the DCO by requirement 6 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>Schedule 15, Protected Provisions, Part 8, Article 92 of the draft DCO [EN010142/APP/3.11(Rev03)] also includes measures for the Scheme to fund a site familiarisation exercise in connection with the BESS prior to it being commissioned and for an annual review of the Principal Site to take place for its operational lifetime until the year in which decommissioning commences.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-095	Fillingham Parish Meeting	Requirements in the DCO	15 Fillingham Parish Meeting is concerned that the standards the developer would be held to at the end of the life of the project are not clear.	<p>Requirement 5 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] also prevents the commencement of development in relation to the solar PV panels, Solar Stations BESS, substations and Cable Route Corridor until the detailed design has been approved of the Scheme. The includes layout, which would relate to the siting of the BESS within solar array. This provides a further control mechanism for the relevant planning authority to consider the layout of the proposed BESS.</p> <p>The design parameters secured by the Outline Design Principles Statement [AS-058], the Outline Drainage Strategy [APP-098] and the FBSMP [APP-225] and with detailed design and management plans secured by requirements within Schedule 2 of the draft DCO [EN010142/APP/3.1(rev03)] will ensure that fire safety and reduced environmental risk for BESS is embedded into the design of the Scheme.</p>
RR-095	Fillingham Parish Meeting	Applicant's responsibilities	16 Fillingham Parish Meeting is concerned that Tillbridge Solar has no track record of development at this scale, in particular to be able to fulfil the obligation for decommissioning and restoration of land at the end of the project lifecycle, which could leave the community with a significant liability to restore the land to a useful purpose.	<p>The standards that the Applicant will be held to at the end of the Scheme's operating life are clear. The requirement that the Scheme be decommissioned is included within the draft DCO [EN010142/APP/3.1(Rev03)] and would be a legal requirement should the Scheme be consented, as the DCO is a statutory instrument (i.e. a piece of legislation). This decommissioning would need to be carried out in accordance with a Decommissioning Environmental Management Plan, the final version of which would require approval from the relevant planning authority. The Applicant has submitted a Framework DEMP [EN010142/APP/7.10(Rev01)] as part of its DCO Application. The DEMP would need to be substantially in accordance with this. The Framework DEMP [EN010142/APP/7.10(Rev01)] includes mitigation and monitoring measures to minimise environmental effects, the development of complementary plans and procedures to sit alongside the DEMP and the principles for the implementation and operation of the DEMP. The DEMP will ensure that the land is reinstated back to its original condition before the construction and operation of the Scheme.</p> <p>A breach of a DCO requirement (such as this requirement in relation to decommissioning) would be a criminal offence, enforceable against the undertaker with responsibility under the Order at the time.</p> <p>The Scheme is being brought forward by two established solar developers, Recurrent Energy (a Canadian Solar company) and Tribus Clean Energy. The project developers have brought forward other large scale solar projects in the UK including Sunnica Energy Farm and Mallard Pass Solar Farm. Both of these projects have received development consent from the Secretary of State.</p> <p>It is true that neither of the project partners have experience in decommissioning solar farms at this time, this is because little to no such decommissioning has been carried out given the age of solar farms in the UK. The requirement that the Scheme be decommissioned is included within the draft DCO [EN010142/APP/3.1(Rev03)] and would be a legal requirement should the Scheme be consented (and breach of such requirement would be a criminal offence). This decommissioning would need to be carried out in accordance with a Decommissioning Environmental Management Plan, the final version of which would require approval from the relevant planning authorities.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-095	Fillingham Parish Meeting	Benefits of the Scheme	17 The energy and decarbonisation benefits made for the Tillbridge Solar Project are oversimplified, overstated and misleading.	<p>The Applicant has submitted a Framework Decommissioning Environmental Management Plan [EN010142/APP/7.10(Rev01)] as part of its DCO Application.</p> <p>It is important to note that the DCO is different to a planning permission as it is a statutory instrument (piece of legislation) and so its requirements are legally enforceable and have criminal implications. The requirements around decommissioning are enforceable by the relevant planning authority, and it is a criminal offence for the undertaker to be in breach of the obligation. The Applicant is aware of its responsibilities under the DCO and takes them very seriously, and it is aware of the criminal liability attaching to any breach of the Order. The Proceeds of Crime Act 2002 also acts as a further deterrent to such a breach. Further, the elements of the installed solar farm represent a valuable asset for the Applicant, so it would be in its interests financially, to decommission the site in order to recycle or sell those components.</p> <p>This should give confidence that the Scheme will be decommissioned at the end of its operating life and the land restored to its current use.</p>
RR-095	Fillingham Parish Meeting	Loss of agricultural land	18 FPM is concerned that in the wake of major disruption to food supplies in recent years, displacing productive arable land in the UK with solar panels that can make such a limited contribution to the country's energy needs, undermines the country's ability to source food locally and maintain food security.	<p>Agricultural land quality was a key consideration in the Applicant's site selection process as set out in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and the Design and Access Statement [AS-031].</p> <p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into account reductions to the Order limits following the Applicant's Change Application submitted in September 2024, for the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is provided within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p> <p>As set out in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. All other infrastructure will be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a Decommissioning Environmental Management Plan (DEMP). In accordance with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)] submitted as part of the Application. The only potential permanent removal of land from agricultural use may result from proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However, the potential change of use of 0.07% of agricultural land that is BMV land to proposed woodland is not considered to be significant, and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60 year operational period has the potential to accrue improvement to soil function over a large area.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 (Assessment of Likely Impacts and Effects) in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire and that following operation, the land used for the Scheme can be reverted back to agricultural land.</p> <p>The cumulative assessment of impacts on food production is set out within Section 18.15 of Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. Alongside other solar developments, the cumulative land take would be up to 2.2% of all agricultural land in Lincolnshire. As such, the cumulative impacts on agricultural land represent a very small proportion of the total agricultural land in Lincolnshire, and are not considered to be significant.</p> <p>The Applicant has prepared a report setting out the cumulative effects of solar projects on BMV land within Lincolnshire, which is located at Appendix B of this document. This report further concludes that the potential permanent loss of BMV land in Lincolnshire as a result of all solar NSIPs and ground mounted solar TCPA projects, amounts to only 0.9% of all BMV land within Lincolnshire.</p> <p>.</p> <p>The Secretary of State in his recent decisions for Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] recognised the local concerns on the loss of productive agricultural land but concluded that, on a cumulative basis alongside the</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-095	Fillingham Parish Meeting	Efficiency of land	19 There are many and increasing demands on the use of land, and in a situation of increasing pressure on land use, the Tillbridge Solar Project represents a highly inefficient use of land for the region – as well as for the country.	<p>other solar projects (including the Tillbridge Solar Project), that the cumulative assessments forming part of each application have suitably considered cumulative effects. The Secretary of State at paragraph 4.178 of the Gate Burton Energy Park decision states that the “cumulative loss of BMV land in Lincolnshire due to NSIP solar projects amounts to 0.83% of the total BMV land with a further 0.21% loss to TCPA solar projects. The Secretary of State considers that this is only around 1% of the total BMV land in Lincolnshire, further noting that the land will be lost for a temporary, albeit long-term period and that the land can be returned upon decommissioning of development to its original state. The Secretary of State places great importance on BMV land but is satisfied that the siting of the Proposed Development on BMV land has been justified.”</p> <p>The Tillbridge Solar Project, through its site selection process sought to minimise impacts upon BMV land and through design iteration of the Scheme, has further minimised impacts. The siting of the Scheme on BMV land is justified and the loss of agricultural land and therefore potential food production would be temporary and reversible allowing the Principal Site to be brought back into agricultural use following decommissioning.</p> <p>In the recent Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] decisions, the Secretary of State (SoS), determined that the cumulative loss of BMV land across these two schemes, together with West Burton and the Tillbridge Solar Project, and therefore the potential impact upon agricultural land and food production, will be minor and would not impact food security when these four solar NSIPs are considered both individually and cumulatively. The SoS agreed with the ExA’s recommendations on agricultural land use in considering the Gate Burton Energy Park. The ExA confirmed in its recommendation report at paragraph 3.11.114 that:</p> <p><i>“Whilst I appreciate the concerns of many IPs and the concerns expressed there is no meaningful assessment of the extent of lost production. Furthermore, given the national and regional figures identified by the Applicant in respect of cereal production even taking account of the whole site area there would be little discernible effect. This would be true even in a cumulative scenario on the basis of the figures produced by the Applicant.”</i></p> <p>The Applicant agrees that there are many and increasing demands on the use of land. Chapter 4: Alternatives and Design Evolution [APP-035] of the ES, sets out the site selection process for the Principal Site. This illustrates how the site selection process sought to minimise conflicts with land required for alternative uses allocated in development plans (housing and employment), considered the suitability and availability of previously developed land as part of the site selection process and ensured the protection of sites designated for their ecological or cultural value,</p> <p>Once the Principal Site was selected, the design seeks to deliver a Scheme that makes an efficient use of land whilst maximising the generation of electricity in accordance with the export/import agreement with NGET and in view of the critical national priority to deliver renewable energy projects to meet legally binding targets to decarbonise the generation of electricity by 2035.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>Paragraph 2.10.17 of NPS EN-3 (Ref 1-18) states that a solar farm requires between 2 to 4 acres of each MW of output but acknowledges that this will vary “with some being larger and some being smaller.” The Scheme as based on the Indicative Principal Site Layout Plan (Figure 3-1) of the Environmental Statement [AS-055] (the principles of which are secured through the Works Plans [EN010142/APP/2.3(Rev02)], Framework LEMP [EN010142/APP/7.17(Rev02)] and Outline Design Principles Statement [AS-058]) would amount to a scale and density of development at 3.65 acres per MW. This being in the range considered acceptable by NPS EN-3 (Ref 1-18).</p> <p>All land within the Principal Site is necessary for the Scheme either comprising land utilised for solar capable of generating sufficient electricity to fully utilise the export and import agreement with NGET and associated development or land required and necessary for mitigation to minimise effects in relation to landscape, heritage and ecology.</p>
RR-095	Fillingham Parish Meeting	Impacts of the Scheme and alternatives	<p>20 Fillingham Parish Meeting has joined with other local parishes to oppose the Tillbridge Solar Project, as the benefits of the development do not outweigh the harms – and there are credible alternatives that have not been adequately pursued.</p> <p>21 FPM believes that, given the pressure in the UK on land use, solar on commercial and domestic rooftops must be pursued as a matter of urgency before large areas of land are used for intermittent, low-load factor solar power.</p>	<p>The Applicant notes Fillingham Parish Meetings comments, and notes that the Government has identified through its energy policy, most recently in the Overarching National Policy Statement for Energy EN-1 and National Policy Statement for Renewable Energy EN-3, that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant’s Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p> <p>As discussed in the Statement of Need [APP-210] the Applicant recognises that decentralised energy generation on roof tops has an important role to play in decarbonisation, however, on its own, smaller scale solar, including rooftop solar, is not likely to deliver a sufficient total capacity at the required pace and at an affordable cost to meet the Government’s targets. Whilst rooftop solar is likely to contribute to decarbonisation, large-scale solar is still an essential part of the future electricity system, that must be deployed where there is the natural resource, where land is available and suitable, and in proximity to available grid connection locations, such as the area local to the Scheme.</p>
RR-284	Springthorpe Parish Meeting	Summary of Relevant Representation	<p>On behalf of Springthorpe Parish Meeting I wish to request that the National Inspector REFUSE Environmental Statement permission for the planning application made by Tillbridge Solar Ltd to proceed The reasons are various and will be detailed in the further comments made after registration</p>	<p>The Applicant notes this comment.</p>
RR-109	Glentworth Parish Council	Cumulative impacts	<p>Glentworth Parish Council is opposed to this application as we believe on its own and taken with the other proposed solar farm developments that are coming forward at the same time (West Burton, Cottam, Gate Burton and Tillbridge) the overall, cumulative</p>	<p>The assessment of cumulative impacts of the Scheme with other existing and proposed energy developments as well as other developments in the locality is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. The Scheme and other solar DCOs have worked collaboratively during design</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>development impact is seriously detrimental. There are specific issues that we believe the Inspector should take into account:</p> <p>1. the 4 schemes collectively will impact on 10,000 acres of current farmland, affecting 31 villages and the lives of all those who live in the area. These schemes cannot nor should they be considered in isolation, the cumulative impact is a fundamental and material consideration in planning terms and we would urge the Inspector to review them as a set. We would add that it is clear that whilst being promoted by separate companies, there is cooperation between those companies, who clearly regard the schemes as being interlinked.</p>	<p>development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures. Consideration has also been given as to how habitat creations link with other proposed developments and more widely across the landscape.</p> <p>The Applicant acknowledges that there are cumulative effects as a result of the Scheme and other solar schemes in the area; significant cumulative effects have been identified on three landscape character areas and eight representative views during construction and decommissioning however these are temporary and short term, for the duration of the construction period. A temporary significant beneficial effect from the generation of construction employment at a local scale was also identified.</p> <p>Whilst the Applicant has minimised visual impacts as far as practicable, as explained above, the Scheme (along with other solar schemes) would also result in significant cumulative effects on Local Landscape Character Area 3A Till Vale at year 15 of operation, and two significant visual effects at Viewpoint 7 on the B1398 Middle Street, Glentworth Cliff Farm and Viewpoint 13 at public footpath (Hems/787/2) on Lincoln Cliff, Hemswell at year 15 of operation. All other cumulative effects have been assessed as not significant. Cumulative landscape and visual impacts will be managed in accordance with the relevant environmental management plans, including the Framework LEMP [EN010142/APP/7.17(Rev02)]</p> <p>Further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is provided in the Joint Report on the Interrelationship with other National Infrastructure projects [APP-215 to APP-217].</p> <p>Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] assesses the loss of agricultural land in combination with all cumulative solar schemes (Gate Burton Energy Park, West Burton Solar Project and the Cottam Solar Project and others set out in Table 18-22 in Chapter 18 of the Environmental Statement [APP-049]). This confirms that in combination with all cumulative solar developments that there is still not a significant effect on agricultural production as a result of the schemes. The area of agricultural land that would be temporarily taken out agricultural use across all four schemes would be 2.2% of agricultural land in Lincolnshire.</p> <p>The Applicant has also prepared a report setting out the cumulative effects of solar projects on BMV land within Lincolnshire, which is located at Appendix B of this document. This report further concludes that the potential permanent loss of BMV land in Lincolnshire as a result of solar DCO projects would be 0.8%, and would be 0.27% as a result of ground mounted solar TCPA projects. This amounts to only 0.9% of all BMV land within Lincolnshire permanently lost to solar projects within Lincolnshire. The Secretary of State in his recent decisions for Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] recognised the local concerns on the loss of productive agricultural land but concluded that, on a cumulative basis alongside the other solar projects (including the Tillbridge Solar Project), that the cumulative assessments forming part of each application have suitably considered cumulative effects. The Secretary of State at paragraph 4.178 of the Gate Burton Energy Park</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>decision states that the “cumulative loss of BMV land in Lincolnshire due to NSIP solar projects amounts to 0.83% of the total BMV land with a further 0.21% loss to TCPA solar projects. The Secretary of State considers that this is only around 1% of the total BMV land in Lincolnshire, further noting that the land will be lost for a temporary, albeit long-term period and that the land can be returned upon decommissioning of development to its original state. The Secretary of State places great importance on BMV land but is satisfied that the siting of the Proposed Development on BMV land has been justified.”</p> <p>The Tillbridge Solar Project, through its site selection process sought to minimise impacts upon BMV land and through design iteration of the Scheme, has further minimised impacts. The siting of the Scheme on BMV land is justified and the loss of agricultural land and therefore potential food production would be temporary and reversible allowing the Principal Site to be brought back into agricultural use following decommissioning.</p> <p>In the recent Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] decisions, the Secretary of State (SoS), determined that the cumulative loss of BMV land across these two schemes, together with West Burton and the Tillbridge Solar Project, and therefore the potential impact upon agricultural land and food production, will be minor and would not impact food security when these four solar NSIPs are considered both individually and cumulatively. The SoS agreed with the ExA’s recommendations on agricultural land use in considering the Gate Burton Energy Park. The ExA confirmed in its recommendation report at paragraph 3.11.114 that:</p> <p><i>“Whilst I appreciate the concerns of many IPs and the concerns expressed there is no meaningful assessment of the extent of lost production. Furthermore, given the national and regional figures identified by the Applicant in respect of cereal production even taking account of the whole site area there would be little discernible effect. This would be true even in a cumulative scenario on the basis of the figures produced by the Applicant.”</i></p> <p>It is also important to note that both the Gate Burton Energy Park [EN10131] and the Cottam Solar Project [EN10133] have obtained development consent with the ExA having already examined cumulative effects and the SoS having considered the ExA recommendations. With respect to the Gate Burton Energy Park, the SoS at paragraph 4.89 of his decision agreed with the methodology used to consider cumulative effects taking into account the worst-case scenario and that there are two significant cumulative effects identified on landscape and visual receptors. At paragraph 3.14.20 of the ExA’s report, it was concluded that:</p> <p><i>“Overall and I am satisfied that the combination of both effect interactions and cumulative effects between the short list of schemes in the locality have been taken into account in reaching my conclusions. The Applicant has sought to introduce collaboration with the developers of the other solar NSIP schemes, not least through the shared GCC which also facilitates shared communication and consultation potential and has sought to</i></p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p><i>embed the potential for further collaboration in the fCTMP. Whilst there may be some effect interactions that would occur, for example, landscape and visual amenity and noise and vibration, I am satisfied that there are no significant effects from effect interactions between differing effects on receptors, such that would increase the intensity and magnitude of effect. I agree with the Applicant's conclusions of the assessment of cumulative effects where two significant cumulative effects are identified on landscape and visual receptors."</i></p> <p>In applying the planning balance, the ExA at paragraph 5.3.13 of his report concludes that <i>"none of the matters which I have weighed against the Order being made, either in isolation or in combination, outweigh the significant benefits that I have identified."</i></p> <p>The Cottam Solar Project Environmental Statement Chapter 23 identified significant cumulative effects after embedded mitigation and mitigation measures have been applied with the ExA concluding on cumulative matters at paragraphs 3.13.30 of the recommendation report that:</p> <p><i>"We are satisfied that the Applicant has adequately assessed the likely significant effects of the Proposed Development cumulatively with other planned development and that the Environmental Statement includes sufficient information on how the effects of the proposal would combine and interact with the effects of other development during construction, operation and decommissioning. Accordingly, we are satisfied that the requirements of the EIA Regulations, 2011 NPS EN-1 and 2024 NPS EN-1 are met."</i></p> <p>The SoS confirmed at paragraph 7.3 of his decision letter in relation to the Cottam Solar Project that he agreed with the ExA's conclusions in respect of cumulative effects and that despite these impacts that the benefits of the Proposed Development outweigh its adverse impacts. The SoS goes on to state at paragraph 7.6 of his decision that:</p> <p><i>"The Secretary of State does not believe that the national need for the Proposed Development as set out in the relevant NPSs is outweighed by the Development's potential adverse impacts,"</i></p> <p>Against the context above, the Planning Statement [AS-029] submitted in support of the Tillbridge Solar Project confirms at paragraph 7.4.34 that significant landscape and visual cumulative effects remain when the Tillbridge Solar Project is considered in combination with the other solar NSIPs. Whilst each development consent will be considered on its merits, in applying the overall planning balance, the recent approval of development consent for the Gate Burton Energy Park and the Cottam Solar Project are important and relevant in the consideration of the Tillbridge Solar Project. All three projects, either through ratification by the SoS in relation to the made DCOs or through the technical work submitted in support of the Tillbridge Solar Project agree that there are cumulative effects that attach negative weight. However, the made development</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-109	Glentworth Parish Council	Scale of the Scheme and environmental impacts	<p>2. The scale of development proposed is inappropriate for a rural area. It amounts to the industrialisation of the countryside on a scale that would not be considered if what was proposed was housing or industrial/commercial buildings. Whilst there are claims about the environmental benefits of the scheme in terms of supporting the UKs need to develop alternate energy production using renewables, any such claims need to be properly assessed and measured against the environmental impacts arising from the loss of habitats, destruction of green space, environmental impact of bringing construction materials, the panels themselves and the supporting infrastructure to the UK. Glentworth Parish Council is not opposed to the development of renewable energy, but we challenge and question the scale of these proposals in the context of the setting.</p>	<p>consents agree that despite this negative weight, the benefits of the Proposed Developments is not outweighed by its adverse impacts confirming that development consent should be granted in both cases. In the case of the Tillbridge Solar Project, the primary policy consideration is its compliance with the designated Energy NPS. Given the critical national priority (CNP) to provide low carbon infrastructure, which includes the deployment of large-scale ground mounted solar, NPS EN1 (Ref 1-17) is clear at paragraph 4.2.15 that <i>“all but the most exceptional circumstances, it is unlikely that consent will be refused.”</i></p>
				<p>The Applicant acknowledges that the Scheme would result in some residual significant impacts, such as landscape and visual impacts, as concluded in the Environmental Statement. However, there is a balancing of considerations to be undertaken by the Examining Authority and ultimately the Secretary of State, which balances the Critical National Priority and urgent need for projects such as the Scheme to deliver on the Governments targets of net zero, against adverse effects, which are unfortunately unavoidable, despite the Applicant's best efforts to avoid and minimise these.</p>
				<p>The Applicant notes that the Government has identified through its energy policy, most recently in the Overarching National Policy Statement for Energy EN-1 and National Policy Statement for Renewable Energy EN-3, that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p>
				<p>Paragraph 2.10.17 of NPS EN-3 (Ref 1-18) states that a solar farm requires between 2 to 4 acres of each MW of output but acknowledges that this will vary <i>“with some being larger and some being smaller.”</i> The Scheme based on the Indicative Principal Site Layout Plan (Figure 3-1 of the Environmental Statement [APP-128]), whose principles are secured through the Works Plans [EN010142/APP/2.3(Rev 02)], Framework LEMP [EN010142/APP/7.17(Rev02)] and ODP Statement [AS-058] would amount to a scale and density of development at 3.65 acres per MW. This being in the range considered acceptable by NPS EN-3 (Ref 1-18).</p>
				<p>The location of the Scheme on agricultural land, in the countryside was chosen following a five stage process from the determination of an initial search area based upon considerations of irradiance (sunlight) and the identification of relatively low lying and flat topography to maximise energy generation within the east of England. The characteristics of the land in this part of Lincolnshire are optimal for the generation of renewable energy by solar PV, as it has good levels of irradiation and large areas of flat land. From this baseline, a Point of Connection search was then undertaken by the Applicant. The site selection process found a lack of availability of suitable and available previously-developed land within 15km of the point of connection for the Scheme and has also been informed by a site selection process that excluded land constrained by planning and environmental designations as set out in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-109	Glentworth Parish Council	Loss of agricultural land	<p>3. Building on point 2, the loss of productive farmland is of serious concern. Much is made in the application that the land in question is of low grade but however low that agricultural grade might be, once consent is granted for extensive solar panel construction the land will not produce any food, whether for human or animal consumption or for use as biomass. At a time when, as well as energy security, the UK is concerned with food security and the cost and environmental impact of importing significant amounts of food, there is a balance to be struck between the development of solar farms and the use of that farmland for food production. We believe there needs to be a proper examination of the relative benefits and a testing of any assumptions that the claimed CO2 reduction benefits of the solar farm offset the impacts of lost local food production, the CO2 absorption of land being used for agriculture and the loss of farm land.</p>	<p>The application is supported by a robust Environmental Statement (ES) [APP-031 to APP-207] which has been prepared in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 1-35) and relevant guidance. The design process for the Scheme has been heavily influenced by the findings of early environmental appraisals and the EIA process. The Scheme has had several measures incorporated into the design to avoid or minimise environmental impacts and the Scheme includes embedded mitigation. Chapter 5: EIA Methodology of the Environmental Statement [APP-035] sets out the methodology adopted to complete the Environmental Statement in full. The Environmental Statement considers impacts on habitats (refer to Chapter 9: Ecology and Nature Conservation [APP-040]), construction traffic (refer to Chapter 6: Air Quality [APP-037], Chapter 13: Noise and Vibration [AS-006] and Chapter 16: Transport and Access [APP-047]), and the carbon footprint of bringing materials to the UK (Chapter 7: Climate Change [APP-038]).</p>
				<p>Whilst the urgent and critical need for the Scheme is established by NPS EN-1 (Ref 1-17) and EN-3 (Ref 1-18), the granting of development consent for other solar NSIPs (Gate Burton Energy Park and the Cottam Solar Project) also connecting into the National Grid Cottam Substation further establishes through decision making the need for large scale ground mounted solar projects to be deployed.</p>
				<p>Agricultural land quality was a key consideration in the Applicant's site selection process. As set out in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and the Design and Access Statement [AS-031].</p>
				<p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into account reductions to the Order limits following the Applicant's Change Application submitted in September 2024, for the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is provided within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p>
				<p>As set out in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. All other infrastructure will be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a Decommissioning Environmental Management Plan (DEMP). In</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>accordance with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)] submitted as part of the Application. The only potential permanent removal of land from agricultural use may result from proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However the potential change of use of 0.07% of agricultural land that is BMV land to proposed woodland is not considered to be significant, and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60 year operational period has the potential to accrue improvement to soil function over a large area. Whilst not food production, woodland presents benefits provided by the Scheme in terms of biodiversity and provides future opportunities for farm diversification.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 of Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire. Land can continue in agricultural production through the operational phase and that following operation, the land used for the Scheme can revert back to current agricultural management.</p> <p>Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] assesses the loss of agricultural land in combination with all cumulative solar schemes (Gate Burton Energy Park, West Burton Solar Project and the Cottam Solar Project and others set out in Table 18-22 in Chapter 18 of the Environmental Statement [APP-049]). This confirms that in combination with all cumulative solar developments that there is still not a significant effect on agricultural production as a result of the schemes. The area of agricultural land that would be temporarily taken out agricultural use across all four schemes would be 2.2% of agricultural land in Lincolnshire.</p> <p>The Applicant has also prepared a report setting out the cumulative effects of solar projects on BMV land within Lincolnshire, which is located at Appendix B of this document. This report further concludes that the potential permanent loss of BMV land in Lincolnshire as a result of solar DCO projects would be 0.8%, and would be 0.27% as a result of ground mounted solar TCPA projects. This amounts to only 0.9% of all BMV land within Lincolnshire permanently lost to solar projects within Lincolnshire.</p> <p>The Secretary of State in his recent decisions for Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] recognised the local concerns on the loss of productive agricultural land but concluded that, on a cumulative basis alongside the other solar projects (including the Tillbridge Solar Project), that the cumulative assessments forming part of each application have suitably considered cumulative effects. The Secretary of State at paragraph 4.178 of the Gate Burton Energy Park decision states that the <i>“cumulative loss of BMV land in Lincolnshire due to NSIP solar projects amounts to 0.83% of the total BMV land with a further 0.21% loss to TCPA solar projects. The Secretary of State considers that this is only around 1% of the total BMV</i></p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p><i>land in Lincolnshire, further noting that the land will be lost for a temporary, albeit long-term period and that the land can be returned upon decommissioning of development to its original state. The Secretary of State places great importance on BMV land but is satisfied that the siting of the Proposed Development on BMV land has been justified.”</i></p> <p>The Tillbridge Solar Project, through its site selection process sought to minimise impacts upon BMV land and through design iteration of the Scheme, has further minimised impacts. The siting of the Scheme on BMV land is justified and the loss of agricultural land and therefore potential food production would be temporary and reversible allowing the Principal Site to be brought back into agricultural use following decommissioning.</p> <p>In the recent Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] decisions, the Secretary of State (SoS), determined that the cumulative loss of BMV land across these two schemes, together with West Burton and the Tillbridge Solar Project, and therefore the potential impact upon agricultural land and food production, will be minor and would not impact food security when these four solar NSIPs are considered both individually and cumulatively. The SoS agreed with the ExA's recommendations on agricultural land use in considering the Gate Burton Energy Park. The ExA confirmed in its recommendation report at paragraph 3.11.114 that:</p> <p><i>“Whilst I appreciate the concerns of many IPs and the concerns expressed there is no meaningful assessment of the extent of lost production. Furthermore, given the national and regional figures identified by the Applicant in respect of cereal production even taking account of the whole site area there would be little discernible effect. This would be true even in a cumulative scenario on the basis of the figures produced by the Applicant.”</i></p>
RR-109	Glentworth Parish Council	Landscape and Visual Impacts to Lincoln Cliff	<p>4. The development of the solar farms would have a significant impact on the views west from along the Lincolnshire Edge, and the views from the villages looking up towards the Edge. These are classified as an Area of Great Landscape Value, awarded not for the benefit of the land, but the benefit of the people to enjoy those views... It's not the land in itself that's protected, it's the views. Added to this will be a loss of habitats, impacts on wildlife and the wider ecosystem and weather systems, along with destruction of soil structure and increased flood risk. Little to nothing will grow in the fields covered by the panels, this will in turn affect insects and the animals that feed on them, including birdlife. There will also be an increase in rat populations due to lack of predation and invasive plant weed species. In essence the environment and communities in the region will be significantly harmed for no real national benefit.</p>	<p>The Applicant acknowledges that the operation of the Scheme will result in a residual significant adverse effect (at the Year 15 stage, when planting is considered to be sufficiently mature) on Local Landscape Character LLCA 3A Till Vale across the Principal Site and a small number of representative viewpoints that reflect visual and recreational receptors, as presented in Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043]. It is also acknowledged that one of the latter reflects Viewpoint 10 in the Glentworth Neighbourhood Plan. The Applicant notes that views from the other viewpoints will not result in appreciable visibility of the Scheme; and that visibility from Middle Street where it runs closest to the Scheme to the north is almost exclusively from fast-moving vehicles and where there is no verge or public stopping place. This section of Middle Street is not generally considered to be attractive to recreational cyclists and a sensitive location.</p> <p>The LVIA notes that there is a balance to be struck in terms of intentional screening of the Scheme against loss of locally important views both to and from the cliff that inform the AGLV designation. However, the overall design of the Scheme, as described in the Design and Access Statement [AS-031] and in the Framework Landscape and Ecological Management Plan [EN010142/APP/7.17(Rev02)] and illustrated on the Indicative Landscape Masterplan [EN010142/APP/7.19(Rev01)], is intended to</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>reduce landscape and visual effects as far as practicable. This includes the set-backs and provision of land only for ecological mitigation along the western edge of Glentworth village.</p> <p>The Applicant has undertaken detailed ecological surveys to understand the habitats and species present. Full details of these surveys are provided in Table 9-11 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with further details set out in Appendices 9-1 to 9-12 of the Environmental Statement [APP-081 to APP-094] and [EN010142/APP/6.2(Rev01)].</p> <p>A detailed assessment of the potential impacts of the Scheme on biodiversity is presented in Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with particular reference to Tables 9-14 and 9-15. The Applicant has carefully designed the Scheme to avoid or minimise adverse effects to biodiversity, with substantial measures embedded and detailed in Table 9-13 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040].</p> <p>Measures to protect species and habitats as set out in the Framework CEMP [EN010142/APP/7.8(Rev01)], Framework OEMP [EN010142/APP/7.9(Rev01)], Framework DEMP [EN010142/APP/7.10(Rev01)] and Framework LEMP [EN010142/APP/7.17(Rev02)] will ensure that the Scheme avoids any likely significant adverse impacts on all important species, habitats and designated sites, and the inclusion of enhancement measures to increase the biodiversity value of the Scheme as an overall benefit. A requirement forming part of the draft DCO [EN010142/APP/3.1(Rev03)] will ensure that the detailed CEMP, OEMP, DEMP and LEMPs (which will be required to be substantially in accordance with the relevant framework plans) have to be submitted and approved by the relevant planning authority prior to the relevant phase of the Scheme and to be implemented in accordance with the approved details thereby securing the protection and enhancement measures.</p> <p>The assessment in Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040] concludes that there will be no significant adverse effects on biodiversity and as a result of the proposed enhancement measures the Scheme will result in significant beneficial effects to broad-leaved woodland, running water, hedgerows and breeding birds. It will also result in beneficial effects to standing water, reptiles and amphibians, non-breeding birds, bats, badger and other mammals as a result of planting in gaps in hedgerow and the creation of new hedgerows, tree planting and conversion of arable land to grassland habitats.</p> <p>Once operational, the soil will be rested from intensive farming. During construction, management plans will ensure that soil quality is protected. The Application is supported by a Framework Soil Management Plan [EN010142/APP/7.12(Rev01)]. This includes measures to avoid soil structural damage by suspending soil handling and trafficking when rain has wetted soil to a plastic consistence, as set out in paragraphs 4.2.2 (e), 4.2.3 and 5.2.1. A detailed Soil Management Plan, which will be required to be substantially in accordance with the Framework Soil Management Plan [EN010142/APP/7.12(Rev01)], will need to be approved by the Local Planning Authority</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>prior to construction. This is secured by requirement 18 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>Appendix 10-3 of the Environmental Statement [APP-097] contains a site-specific Flood Risk Assessment and Chapter 10: Water Environment of the Environmental Statement [APP-041] assesses whether the Scheme would have a significant effect in terms of flood risk. When considered within the context of national, regional and local planning policy in respect of development and flood risk, this FRA concludes that the area of the Scheme remains safe from flood risk, does not increase flood risk elsewhere and fulfils the Government's wider criteria for sustainable development. Chapter 10: Water Environment of the Environmental Statement [APP-041] also demonstrates that through the inclusion of embedded mitigation that there are no significant residual effects on the water environment during construction, operation or decommissioning.</p> <p>The Framework CEMP [EN010142/APP/7.8(Rev 01)] incorporates measures to prevent an increase in flood risk or pollution during the construction works. Requirement 12 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] prevents the commencement of development until a detailed CEMP is approved by the relevant planning authority. The detailed CEMP(s) must be substantially in accordance with the Framework CEMP [EN010142/APP/7.8(Rev 01)], thereby ensuring that flood risk measures set out in the Framework CEMP [EN010142/APP/7.8(Rev 01)] are incorporated into the detailed Scheme. In addition, the Outline Design Principles (ODP) Statement [AS-058] requires that Solar PV panels will not be installed lower than 20.06m AOD to mitigate the risk of flooding from the Yewthorpe Beck within the Principal Site. This is secured through requirement 5 of the draft DCO [EN010142/APP/3.1(Rev03)] which requires that the detailed design of the Scheme is in accordance with the outline design principles included within the ODP Statement [AS-058].</p> <p>Appendix 10.4: Outline Drainage Strategy of the Environmental Statement [APP-098] has been prepared in accordance with national and local policies. The Outline Drainage Strategy proposes to mimic the existing natural surface water runoff regime, limiting surface water runoff to greenfield rates, and providing attenuation, where required, for the 1 in 100 year plus 40% climate change event. To prevent potential soil erosion in the channels between the solar panels, the Outline Drainage Strategy proposes to plant these areas with native grasslands and wildflower mixes to slow water runoff and mitigate potential erosion. New access roads will be permeable, in accordance with paragraph 2.10.85 of NPS EN-3 ().</p> <p>Requirement 5 of Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)] relates to detailed design. This confirms that the detailed design must accord with the Outline Drainage Strategy [APP-098]. This will ensure that that there is no risk of an increase in water run-off from the Scheme and that it does not increase the risk of flooding elsewhere.</p> <p>The Framework CEMP [EN010142/APP/7.8(Rev 01)] includes measures to prevent the introduction of invasive species into the Principal Site and to carry out pre-</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-293	Sturton by Stow Parish Council	Industrialisation of the landscape	This proposed development is just one of an expanding list of individual applications, which would, if permitted, serve to industrialise a whole region of rural Lincolnshire. Local communities and their already inadequate infrastructure would be impacted negatively during the construction and operational life of the development, as well as losing the very nature of the surrounding environment for no intrinsic benefit. Using productive farmland for inland power generation is counter to the declared intention of improving UK self-reliance, and should be rejected.	<p>construction surveys to ensure that impacts are minimised on habitats and protected and notable species. The pre-construction surveys will be undertaken to provide an update on the presence and location of any invasive species, the findings of which will inform the production of a Biosecurity Management Plan. The Biosecurity Management Plan will set out procedures to ensure that no invasive species are brought onto the Order limits (e.g. Wildlife and Countryside Act 1981 (as amended) (Ref 1-36) Schedule 9 species). In the event that any future infestations of invasive non-native species are identified prior to and/or during the development process, exclusion zones will be established around them, and an Ecological Clerk of Works contacted for advice as required. Requirement 12 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] prevents the commencement of development until a detailed CEMP is approved by the relevant planning authority. The detailed CEMP must be substantially in accordance with the Framework CEMP [EN010142/APP/7.8(Rev 01)] thereby ensuring compliance with the measures to protect the Principal Site from invasive species.</p> <p>The Applicant recognises that the potential for future environmental landscape and visual changes (and associated potential impacts on amenity or health of local communities) associated with the Scheme during construction, operation and decommissioning may be a source of concern for local residents. The Applicant acknowledges that the Secretary of State will need to balance those impacts and changes against the urgent need and critical national priority for the Scheme as set out in Government policy. Although the Applicant acknowledges that there will be some adverse impacts arising from the Scheme, with regard to landscape and visual and associated impacts to health and mental wellbeing, the Applicant has sought to avoid, mitigate and minimise these impacts as much as possible, and has prepared a number of management plans that will ensure that impacts are kept to a minimum. Overall, the Applicants position is that in terms of the overall planning balance, the clear and substantial benefits of the Scheme outweigh any adverse effects, which would be localised, short-term, temporary and/or reversible at the end of the Scheme's lifetime.</p> <p>The Applicant acknowledges the concerns regarding the number of solar schemes proposed in Lincolnshire and the potential impact of this, the inadequacy of local infrastructure during construction and operation and the loss of productive farmland. These issues are addressed in turn below.</p> <p><u>Cumulative impact</u></p> <p>The assessment of cumulative impacts of the Scheme with other existing and proposed energy developments as well as other developments in the locality is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. The Scheme and other solar DCOs have worked collaboratively during design development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures. Consideration has also been given as to how habitat creations link with other proposed developments and more widely across the landscape.</p> <p>The Applicant acknowledges that there are cumulative effects as a result of the Scheme and other solar schemes in the area; significant cumulative effects have been identified on three landscape character areas and eight representative views during construction</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>and decommissioning however these are temporary and short term, for the duration of the construction period. A temporary significant beneficial effect from the generation of construction employment at a local scale was also identified.</p> <p>Whilst the Applicant has minimised visual impacts as far as practicable, as explained above, the Scheme (along with other solar schemes) would also result in significant cumulative effects on Local Landscape Character Area 3A Till Vale at year 15 of operation, and two significant visual effects at Viewpoint 7 on the B1398 Middle Street, Glentworth Cliff Farm and Viewpoint 13 at public footpath (Hems/787/2) on Lincoln Cliff, Hemswell at year 15 of operation. All other cumulative effects have been assessed as not significant. Cumulative landscape and visual impacts will be managed in accordance with the relevant environmental management plans, including the Framework LEMP [EN010142/APP/7.17(Rev02)]</p> <p>Further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is provided in the Joint Report on the Interrelationship with other National Infrastructure projects [APP-215 to APP-217].</p> <p>It is also important to note that both the Gate Burton Energy Park [EN10131] and the Cottam Solar Project [EN10133] have obtained development consent with the ExA having already examined cumulative effects and the SoS having considered the ExA recommendations. With respect to the Gate Burton Energy Park, the SoS at paragraph 4.89 agreed with that the methodology used to consider cumulative effects taking into account the worst-case scenario and that there are two significant cumulative effects identified on landscape and visual receptors.</p> <p>In applying the planning balance, the ExA at paragraph 5.3.13 concludes that <i>“none of the matters which I have weighed against the Order being made, either in isolation or in combination, outweigh the significant benefits that I have identified.”</i></p> <p>The Cottam Solar Project Environmental Statement Chapter 23 identified significant cumulative effects after embedded mitigation and mitigation measures have been applied with the ExA concluding that they were satisfied with the conclusions of the cumulative assessment.</p> <p>The SoS confirmed at paragraph 7.3 of his decision that he agreed with the ExA's conclusions in respect of cumulative effects and that despite these impacts that the benefits of the Proposed Development outweigh its adverse impacts. The SoS goes on to state at paragraph 7.6 of his decision that:</p> <p style="text-align: center;"><i>“The Secretary of State does not believe that the national need for the Proposed Development as set out in the relevant NPSs is outweighed by the Development's potential adverse impacts,”</i></p> <p>Against the context above, the Planning Statement [AS-029] submitted in support of the Tillbridge Solar Project confirms at paragraph 7.4.34 that significant landscape and visual cumulative effects remain when the Tillbridge Solar Project is considered in</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>combination with the other solar NSIPs. Whilst each development consent will be considered on its merits, in applying the overall planning balance, the recent approval of development consent for the Gate Burton Energy Park and the Cottam Solar Project are important and relevant in the consideration of the Tillbridge Solar Project. All three projects, either through ratification by the SoS in relation to the made DCOs or through the technical work submitted in support of the Tillbridge Solar Project agree that there are cumulative effects that attach negative weight. However, the made development consents agree that despite this negative weight, the benefits of the Proposed Developments is not outweighed by its adverse impacts confirming that development consent should be granted in both cases. In the case of the Tillbridge Solar Project, the primary policy consideration is its compliance with the designated Energy NPS. Given the critical national priority (CNP) to provide low carbon infrastructure, which includes the deployment of large-scale ground mounted solar, NPS EN1 (Ref 1-17) is clear at paragraph 4.2.15 that <i>“all but the most exceptional circumstances, it is unlikely that consent will be refused.”</i></p> <p><u>Impacts on local communities</u></p> <p>In terms of existing infrastructure within local communities, this is taken to mean existing roads which will be used by construction vehicles. A full and detailed assessment of potential traffic and transport impacts from construction at sensitive receptors has been undertaken within Chapter 16: Transport and Access of the Environmental Statement [APP-047]. The conclusions indicate that during construction, only one significant residual adverse effect is anticipated on severance, pedestrian delay and non-motorised users' amenity. This is in relation to severance, pedestrian delay (incorporating delay to all non-motorised users) on the B1241 (ATC 23) which passes Sturton-by-Stow Primary School (Table 16-20 of Chapter 16: Transport and Access of the Environmental Statement [APP-047]). The significant adverse effect on the B1241 will only occur in the worst-case scenario for a short period of time if activity on the construction of the Cable Route Corridor is concentrated on the B1241 north of Fleets Road (in the order of a couple of weeks).</p> <p>The Framework Construction Traffic Management Plan [EN010142/APP/7.11(Rev02)] (Framework CTMP) provides full details of embedded mitigation measures that are proposed to prevent or reduce potential adverse effects associated with construction traffic on local roads. A detailed CTMP (which must substantially accord with the Framework CTMP) will need to be approved post consent prior to construction with the relevant local authorities and this is secured by requirement 14 in Schedule 2 to the draft Development Consent Order [EN010142/APP/3.1(Rev03)].</p> <p>Development consent was granted for the Cottam Solar Project [EN10133] on 5 September 2024. The Tillbridge Solar Project has been designed in collaboration with the other NSIP solar projects proposed in the area with a common point of connection at the National Grid Cottam Substation to deliver a shared Cable Route Corridor. The use of the B1241 as a construction route was examined by the ExA in relation to the Cottam Solar Project. In his report, the ExA at paragraph 3.10.28 confirmed that:</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p><i>“Accordingly, we are satisfied that the effects arising from construction traffic access, routing and generation would be ably accommodated on the local highway network.”</i></p> <p>In addition, the ExA concluded at paragraph 3.10.37 of the recommendation report that it was satisfied that cumulative effects would be <i>“adequately ameliorated by traffic movements being spread over the highway network, having regard to the access information contained with the Joint Report.”</i></p> <p>The Scheme, in combination with the other solar projects will ensure the creation of accesses for the construction of the Cable Route Corridor that will not arise in highway safety concerns and the existing road network has sufficient capacity to accommodate vehicles without resulting in a severe impact. The securement of the CTMP through a requirement of the draft DCO [EN010142/APP/3.1(Rev03)] to be substantially in accordance with the Framework CTMP [EN10142/APP/7.11(Rev 02)] will ensure that construction is managed to minimise environmental effects in accordance with the ES. In addition, the Applicant also intends to enter into a Second Cooperation Agreement with the other Solar Projects. The principles of this Second Cooperation Agreement are proposed to include obligations to manage each Project’s cooperation and management of shared mitigation measures in particular with respect to the Cable Coute Corridor.</p> <p><u>Agricultural land</u></p> <p>Agricultural land was a key consideration in the site selection process for the Scheme. The site selection process set out in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] confirms that Grades 1 and 2 BMV land were excluded from further consideration within the initial 15km search area for the Scheme based on provisional ALC mapping from Natural England. The initial site identified for the Principal Site therefore comprised Grade 3 agricultural land. Only through the completion of the ALC survey was the proportion of the BMV land falling within the Principal Site able to be identified. From the identification of the BMV land, the Order limits were iterated to minimise loss, infrastructure that would comprise hardstand (BESS/solar stations and substations) is to be sited outside of BMV land. As a result, the Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). For the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.3% Grade 3b land (non-BMV) and 10.2% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51ha) of Grade 3a BMV land and 0.7% being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>provided within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046],</p> <p>As set out in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. Following removal of solar PV panels, Solar Station and BESS, these areas of the Principal Site will allow the land to be managed for arable production again following an extended period of low input grassland. All other infrastructure will be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a DEMP. In accordance with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.9(Rev 01)] submitted as part of the Application. The only potential permanent removal of land from agricultural use may result from proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However, the potential change of use of 0.08% of agricultural land that is BMV land to proposed woodland is not considered to be significant, and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60 year operational period has the potential to accrue improvement to soil function over a large area.</p> <p>In addition, the loss of BMV land needs to be set within context. Paragraph 14.8.31 of Chapter 14: Socio-Economic and Land Use of the Environmental Statement [APP-045] confirms that of all the land currently used for agricultural production within the Principal Site (1,212ha), that this would only amount to 0.01% of agricultural land in England, 0.10% of agricultural land in the East Midlands and 0.25% of agricultural land in Lincolnshire, which is very small.</p> <p>The ExA Report to the Secretary of State in relation to the Gate Burton Energy Park [EN010131] is also of relevance.</p> <p>The Secretary of State (SoS) in his decision (paragraph 4.176) agreed with the ExA's recommendations with respect to the loss of BMV land concluding that it had been demonstrated that the use of agricultural land was necessary and that the Applicant had sought to avoid the permanent and temporary loss of BMV land where possible. At paragraph 4.178, the SoS refers to the cumulative loss, which takes account of The Tillbridge Solar Project stating:</p> <p style="text-align: center;"><i>“The Secretary of State notes that the cumulative loss of BMV land in Lincolnshire due to NSIP solar projects amounts to 0.83% of the total BMV land with a further 0.21% loss to TCPA solar projects. The Secretary of State considers that this is only around 1% of the total BMV land in</i></p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-318	Upton Parish Council	Objection to the Scheme	Upton Parish Council object to the proposed site of this project	<p><i>Lincolnshire, further noting that the land will be lost for a temporary, albeit long-term period and that the land can be returned upon decommissioning of development to its original state."</i></p> <p>It is important that decisions and planning policy is applied consistently. The SoS agreed that the Gate Burton Energy Park had justified the siting of the Proposed Development on BMV land, that cumulatively, including the Tillbridge Solar Project, only 1% of the total of BMV land in Lincolnshire would be lost temporarily.</p> <p>The Applicant has set out its rationale for selecting the Principal Site and Cable Route Corridor in Chapter 4: Alternatives and Design Evolution within the Environmental Statement [APP-035]. This explains the stages and the main considerations which have influenced the Applicant in how it has selected the land for the Scheme. For the Principal Site this has included seeking to avoid environmental and land use constraints and taking into consideration other criteria such as network connection; topography; field pattern and arrangement; land use conflict, as well as land availability.</p> <p>In accordance with NPS EN-1 (Ref 1-17) paragraph 5.11.3 and NPS EN-3 (Ref 1-18) paragraph 3.10.14 the Applicant considered the availability of brownfield land within range of the point of connection. The brownfield land that was identified was less than 5ha in size or already allocated for other uses within the adopted or emerging local plan at the time of the search. Therefore, it was concluded that there was insufficient brownfield land for the Scheme.</p> <p>The Applicant has also taken a sequential approach to the use of agricultural land considering whether land of lower grade is available and suitable. Following the identification of an area of search derived from the point of connection at the National Grid Cottam Substation the Applicant did not identify any alternative sites which would be of lower grade agricultural land (compared to the majority of the Order limits) that were available or considered suitable for the Scheme and its objectives.</p> <p>The location and design of the Scheme is the result of a comprehensive site selection process that was led by environmental, and planning led considerations to avoid and minimise impacts as early as possible. Following this, the Scheme has undergone an iterative design process which has resulted in the delivery of a functional and efficient Scheme design. This design which will deliver a large amount of renewable and low carbon electricity using solar PV arrays, whilst also being sensitive to the local context and surrounding area within which it is located, avoiding and minimising impacts on the environment as far as practicable.</p> <p>The Applicant's design team worked collaboratively with the project team to provide a cohesive and responsive design for the Principal Site which has been informed by statutory consultation and stakeholder engagement, ongoing environmental assessments, engineering and design considerations, and in collaboration with other developers bringing forward solar DCO projects within proximity to the Scheme.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-033	Broxholme Parish meeting Solar Group	Impacts and scale of the Scheme	<p>This is the 4th in a series of solar factory proposals being rolled out in a very concentrated area. Against a backdrop of climate change alarmism a cartel of opportunistic developers, and absent landowners have proposed schemes that are not technically superior but placed simply where landowners are willing to co operate. At each of the consultations for these schemes the audience is reminded that other schemes cannot be taken into consideration but the cumulative effect will be allowed for. This is a fudge that is unworkable. The environment that is being radically altered must be considered holistically. The natural world does not operate in discreet boxes. Should we travel from our homes in almost any direction we would be assaulted by the vision of canyons of black glass. Our journeys to Gainsborough would entail us passing through three other projects as well as Tillbridge. The proposed panels surreptitiously get taller with each new disclosure, every vista will be despoiled from the immediate gaze to the view from Lincoln edge.</p> <p>Rapidly developing technologies will soon make the Tillbridge scheme that only offers intermittent power redundant and the connections to the National Grid taken up when they could be used more efficiently. The push to utilise rooftop solar generating power where it is used will eclipse these schemes. Technologies are being developed that allow for all kinds of surfaces to generate photovoltaic power are emerging (eg a solar driveway). Tillbridge would take vast areas of agriculturally productive land out of use. The construction would export in specialist outside contractors and produce no enduring local employment. Many residents at the Broxholme Parish meeting gain employment directly or indirectly from agriculture and all express opposition to the scheme. The lifespan of these schemes seem strangely elastic from 20 years to half a century. What then of the legacy of vast prairies of black</p>	<p>The Cable Route Corridor was designed in collaboration with the developers of Cottam Solar Project, Gate Burton Energy Park, and West Burton Solar Project, to derive a shared cable corridor in order to minimise impacts through design.</p> <p>Design objectives were developed at an early stage and have guided the Scheme's design response to the local context to develop a good design that balances the need to maximise renewable energy generation from the Scheme, whilst minimising potential adverse impacts and providing mitigation and enhancement measures where practicable, as set out in the Design and Access Statement [AS-031].</p> <p>This has resulted in a Scheme which, with the implementation of mitigation, avoids residual significant adverse effects in relation to biodiversity sites; protected species or habitats; agricultural land; heritage assets; flood risk; water quality; access. Impacts on the local area have therefore been minimised as far as practicable.</p> <p>The assessment of cumulative impacts of the Scheme with other existing and proposed energy developments as well as other developments in the locality is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. The Scheme and other solar DCOs have worked collaboratively during design development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures. Consideration has also been given as to how habitat creations link with other proposed developments and more widely across the landscape.</p> <p>The Applicant acknowledges that there are cumulative effects as a result of the Scheme and other solar schemes in the area; significant cumulative effects have been identified on three landscape character areas and eight representative views during construction and decommissioning however these are temporary and short term, for the duration of the construction period. A temporary significant beneficial effect from the generation of construction employment at a local scale was also identified.</p> <p>Whilst the Applicant has minimised visual impacts as far as practicable, as explained above, the Scheme (along with other solar schemes) would also result in significant cumulative effects on Local Landscape Character Area 3A Till Vale at year 15 of operation, and two significant visual effects at Viewpoint 7 on the B1398 Middle Street, Glentworth Cliff Farm and Viewpoint 13 at public footpath (Hems/787/2) on Lincoln Cliff, Hemswell at year 15 of operation. All other cumulative effects have been assessed as not significant. Cumulative landscape and visual impacts will be managed in accordance with the relevant environmental management plans, including the Framework LEMP [EN010142/APP/7.17(Rev02)]</p> <p>Further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is provided in the Joint Report on the Interrelationship with other National Infrastructure projects [APP-215 to APP-217].</p> <p>The Applicant acknowledges that the operation of the Scheme will result in a residual significant adverse effect (at the Year 15 stage, when planting is considered to be</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>glass, scrap steel and concrete? The reassurances of a return to fields of grain are not very credible. A brown field ripe for "development" is a more likely outcome guessed at by our Parishioners. We oppose the Tillbridge scheme.</p>	<p>sufficiently mature) upon Local Landscape Character LLCA 3A Till Vale and a small number of representative viewpoints that reflect visual and recreational receptors, as presented in Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043]. However, the Applicant has carefully designed the Scheme in consultation with stakeholders to ensure landscape and visual impacts are minimised as far as practicable by proposing a comprehensive landscape and ecological design. This includes new hedgerows, trees, woodland and species-rich meadows providing green infrastructure and improving habitat connectivity within and around the Principal Site; alongside the inclusion of buffers from sensitive features and residential properties, as discussed in the Design and Access Statement [AS-031] and in the Framework Landscape and Ecological Management Plan [EN010142/APP/7.17(Rev02)]. This design is illustrated on the Indicative Landscape Masterplan [AS-064].</p> <p>The Scheme stands to make a significant contribution to the UK's decarbonisation commitment and will provide a reliable, domestic source of renewable energy. The Applicant is aiming to maximise the local economic benefits of the Scheme and have prepared a Framework Skills, Supply Chain and Employment Plan [APP-232] setting out the measures that the Applicant will employ to achieve this. The Applicant is proposing a community benefits package as part of the Scheme. The intention is that this will be delivered in cooperation with the Lincolnshire and Nottinghamshire community foundations. With regard to the workforce, the Applicant is exploring opportunities to maximise uptake of jobs associated with the Scheme by local people. Further information is provided in the Framework Skills, Supply Chain and Employment Plan [APP-232].</p> <p>The Government has identified through its energy policy, most recently in the Overarching National Policy Statement for Energy EN-1 and National Policy Statement for Renewable Energy EN-3, that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need. As discussed in the Statement of Need [APP-210] the Applicant recognises that decentralised energy generation on roof tops has an important role to play in decarbonisation, however, on its own, smaller scale solar, including rooftop solar, is not likely to deliver a sufficient total capacity at the required pace and at an affordable cost to meet the Government's targets. Whilst rooftop solar is likely to contribute to decarbonisation, large-scale solar is still an essential part of the future electricity system, that must be deployed where there is the natural resource, where land is available and suitable, and in proximity to available grid connection locations, such as the area local to the Scheme.</p> <p>Agricultural land quality was a key consideration in the Applicant's site selection process as set out in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and the Design and Access Statement [AS-031].</p> <p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>account reductions to the Order limits following the Applicant's Change Application submitted in September 2024, for the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is provided within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p> <p>As set out in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. All other infrastructure will be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a Decommissioning Environmental Management Plan (DEMP). In accordance with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)] submitted as part of the Application. The only potential permanent removal of land from agricultural use may result from proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However, the potential change of use of 0.07% of agricultural land that is BMV land to proposed woodland is not considered to be significant, and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60 year operational period has the potential to accrue improvement to soil function over a large area. Whilst not food production, woodland presents benefits provided by the Scheme in terms of biodiversity and provides future opportunities for farm diversification.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 of Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire. Land can continue in agricultural production through the operational phase and that following operation, the land used for the Scheme can revert back to current agricultural management.</p> <p>The operational life of the Scheme is 60 years from the date of final commissioning. This will allow the land (that has previously been intensively farmed) to recover ultimately safeguarding the agricultural usage of this land for future generations. The consent for the current Scheme will expire following the 60-year operational period.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>Should the operator wish to continue beyond the 60-year period a new consent (Development Consent Order) would be required.</p> <p>The decommissioning of the Scheme would need to be carried out in line with the detailed DEMP, which will be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev 01)], as secured by Requirement 20 of the draft DCO [EN010142/APP/3.1(Rev 03)]. Failure to comply with this would mean that whoever holds the benefit of the order would be committing a criminal offence. This should give confidence that the Scheme will be decommissioned appropriately once it reaches the end of its operating life.</p>

2.4 Non-Statutory Organisations

Table 2-4. Applicant's Responses to Non-Statutory Organisations

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-303	The New Community Energy Company (NCEC)	Need for solar energy and impact on agricultural food production	There are a lot better alternatives than to have mega industrial solar farms funded by no UK entities – far better to have lots of smaller privately owned generation systems i.e. utilising wind bio digesters hydrogen plants - PV system on house & farm shed roofs - food security is equally if not more important than energy security	<p>The Government has identified through its energy policy, most recently in the NPS EN-1 (Ref 1-17) and NPS EN-3 (Ref 1-18), that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p> <p>The Scheme will deliver large amounts of cheap, secure and low-carbon electricity both during and beyond the critical 2020s timeframe. Maximising the capacity of generation in the resource-rich, well-connected and technically deliverable proposed location for the Scheme, represents a significant and economically rational step forwards in the fight against the global climate emergency.</p> <p>As discussed in the Statement of Need [APP-210], the Applicant recognises that decentralised energy generation on roof tops, wind, bio-digesters and hydrogen plants have an important role to play in decarbonisation. However, as set out in the Statement of Need [APP-210], due to technological advances, solar facilities are already among the cheapest form of electricity generation in the UK and Government forecasts indicate that costs will continue to reduce in the future. Larger solar projects, such as the Scheme, deliver power more quickly and at a lower unit cost than multiple independent schemes which make up the same total capacity, bringing forward carbon reduction and economic benefits in line with government policy.</p> <p>On their own, smaller scale solar, including rooftop solar, wind, bio-digesters and hydrogen plants are not likely to deliver a sufficient total capacity at the required pace and at an affordable cost to meet the Government's net zero targets. Whilst rooftop solar, wind, bio-digesters and hydrogen plants are likely to contribute to</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-057	Cottam Solar Project Limited	Request to register as an Interested Party for the examination	Cottam Solar Project Limited is the undertaker for the Cottam Solar Project DCO (PINS reference EN010133). The DCO application for the Cottam Solar Project was submitted to the Planning Inspectorate on 12 January 2023 and accepted for Examination on 9 February 2023. The Planning Inspectorate's recommendation report to the Secretary of State was issued on 5 June 2024. Cottam Solar Project Limited wishes to register as an Interested Party for the Tillbridge Solar Project DCO Examination, as it may wish to participate in the Examination given the proximity of the two schemes, the commonality of certain stakeholders and the potential for similar or cumulative environmental effects and coordination of mitigation measures. Protective provisions for the benefit of Cottam Solar Project Limited have also been included within the draft DCO for the Tillbridge Solar Project scheme. The Examining Authority for the Tillbridge Solar Project DCO Examination may also wish to direct related questions to Cottam Solar Project Limited.	<p>decarbonisation, large-scale solar is still an essential part of the future electricity system, that must be deployed where there is the natural resource (i.e. solar irradiance), where land is available and suitable (i.e. of an appropriate size and topography), and in proximity to available grid connection locations, such as the area local to the Scheme.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 (Assessment of Likely Impacts and Effects) in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction, operation and decommissioning phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire and that following decommissioning, the land used for the Scheme can be reverted to agricultural land.</p> <p>The change of use from predominantly intensive arable farming to semi-improved grassland across the Order limits will be beneficial to the structure and quality of soils, making it suitable for reversion to agricultural use/food production.</p>
RR-327	West Burton Solar Project Limited	Request to register as an Interested Party for the examination	West Burton Solar Project Limited is the undertaker for the West Burton Solar Project DCO (PINS reference EN010132). The DCO application for the West Burton Solar Project was submitted to the Planning Inspectorate on 21 March 2023 and accepted for Examination on 18 April 2023. The Examination of West Burton Solar Project closed on 8 May 2024. West Burton Solar Project Limited wishes to register as an Interested Party for the Tillbridge Solar Project DCO Examination, as it may wish to participate in the Examination given the proximity of the two schemes, the commonality of certain stakeholders and the potential for similar or cumulative environmental effects and coordination of mitigation measures. Protective provisions for the benefit of West Burton Solar	The Applicant notes this comment.

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			Project have also been included within the draft DCO for the Tillbridge Solar Project scheme. The Examining Authority for the Tillbridge Solar Project DCO Examination may also wish to direct related questions to West Burton Solar Project Limited.	
RR-103	Gate Burton Energy Park Limited	Request to register as an Interested Party for the examination	Gate Burton Energy Park Limited is the undertaker for the Gate Burton Energy Park Order 2024 (PINS reference EN010131). The DCO application for Gate Burton Energy Park was submitted to the Planning Inspectorate on 27th January 2023, examination concluded on the 4th January 2024 and consent was granted on 12th July 2024. Like Tillbridge, the Gate Burton Energy Park lies within the administrative areas of Bassetlaw District Council and West Lindsey District Council, and at county level within Nottinghamshire County Council and Lincolnshire County Council. Gate Burton Energy Park Limited wishes to register as an Interested Party for the Tillbridge Solar Project DCO Examination, as it may wish to participate in the Examination given the proximity of the two schemes, the commonality of certain stakeholders and the potential for similar or cumulative environmental effects and coordination of mitigation measures. Protective provisions for the benefit of Gate Burton Energy Park Limited have also been included within the draft DCO for the Tillbridge Solar Project. The Examining Authority for the Tillbridge Solar Project DCO Examination may also wish to direct related questions to Gate Burton Energy Park Limited.	The Applicant notes this comment.
RR-094	Fenwick Solar Farm Action Group	Need for solar energy and impact on agricultural food production	NO to solar farms. Many other viable alternatives available. We don't want our countryside sacrificed with the inevitable price rise of food. We'll just move from energy insecurity to food insecurity. And Ed Miliband & Kier Starmer will be held accountable by the public that voted them in to listen to their voters instead of forging ahead blindly with personal goals. I'm all for green energy. Have 15Kw of solar panels, 18Kw of battery & air source heat pump. It's not rocket science, promote other variations of green energy and farming.	<p>The Government has identified through its energy policy, most recently in NPS EN-1 (Ref 1-17) and NPS EN-3 (Ref 1-18), that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p> <p>The Scheme will deliver large amounts of cheap, secure and low-carbon electricity both during and beyond the critical 2020s timeframe. Maximising the capacity of generation in the resource-rich, well-connected and technically deliverable proposed location for the Scheme, represents a significant and economically rational step forwards in the fight against the global climate emergency.</p> <p>As discussed in the Statement of Need [APP-210], the Applicant recognises that energy alternatives such as air source heat pumps, and decentralised energy generation on roof tops has an important role to play in decarbonisation. However, on their own, smaller scale solar, including rooftop solar, and air source heat pumps are not likely to deliver a sufficient total capacity at the required pace and at an affordable cost to meet the Government's targets. As set out in the Statement of Need [APP-210], due to technological advances, solar facilities are already among the cheapest form of electricity generation in the UK and Government forecasts indicate that costs will</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001	7000 Acres (7000 Acres)	The impacts of the Scheme outweigh its benefits	<p>Summary Introduction: Fundamentally, the limited energy security and decarbonisation benefits the Tillbridge Solar Project claims to achieve are outweighed by the significant adverse impacts it would have on the region (its communities, ways of life, landscape and its wildlife) and on the nation (in particular, pressure on land use and food security). For development at such a scale, the damaging impacts of Tillbridge solar cannot be mitigated.</p> <p>In addition, the Tillbridge Solar Project (TSP) is one of four NSIP proposals in West Lindsey, Lincolnshire, which fall within a 6 mile radius. Together, these would cover 10,0000 acres of farmland and become the largest solar complex in Europe, and even globally. Due to the unprecedented nature of this development and the significant impact on the area and communities, all NSIP solar projects need to be considered together by the Planning Inspectorate and Secretary of State, i.e. Cottam Solar Project, West Burton Solar Project, Gate Burton Energy and Tillbridge Solar, with other schemes in earlier stages of planning in the adjacent area, such as OneEarth Solar Farm and Steeple Solar. 7000Acres will provide further documentary material in support this submission during the course of the examination.</p>	<p>continue to reduce in the future. Larger solar schemes, such as the Scheme, deliver power more quickly and at a lower unit cost than multiple independent schemes which make up the same total capacity, bringing forward carbon reduction and economic benefits in line with government policy. The Government recognises in NPS EN-1 (Ref 1-17) that growth in solar capacity, alongside other renewable technologies, is expected to improve the dependability of those assets as a combined portfolio, contributing to an adequate and dependable UK generation mix required to meet the UK's energy security needs, and the decarbonisation needs of the UK. Whilst rooftop solar and air source heat pumps are likely to contribute to decarbonisation, large-scale solar is still an essential part of the future electricity system, that must be deployed where there is the natural resource, where land is available and suitable, and in proximity to available grid connection locations, such as the area local to the Scheme.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 (Assessment of Likely Impacts and Effects) in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction, operation and decommissioning phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire and that following decommissioning, the land used for the Scheme can be reverted to agricultural land. The change of use from predominantly intensive arable farming to semi-improved grassland across the Order limits will be beneficial to the structure and quality of soils, making it suitable for reversion to agricultural use.</p>
				<p>The Government has identified through its energy policy, most recently in the Overarching National Policy Statement for Energy EN-1 and National Policy Statement for Renewable Energy EN-3, that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be a significant and important contribution to meeting this need.</p> <p>The Applicant acknowledges that the operation of the Scheme will result in a residual significant adverse effect upon Local Landscape Character LLCA 3A Till Vale and a small number of visual receptors, as presented in Chapter 12: Landscape and Visual Amenity Assessment of the Environmental Statement [APP-043]. However, the Applicant has carefully designed the Scheme in consultation with stakeholders to ensure landscape and visual impacts are minimised as far as practicable by proposing a comprehensive landscape and ecological design which increases connectivity and local access through the landscape, with the inclusion of buffers from sensitive features and properties and the creation of new green infrastructure to provide screening and enhance the landscape condition as discussed in the Design and Access Statement [AS-031] and in the Framework Landscape and Ecological Management Plan [EN010142/APP/7.17(Rev02)]. This design is illustrated on the Indicative Landscape Masterplan [AS-064].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>As set out in Section 5.3 of the Planning Statement [AS-029], and the Environmental Statement, specifically Chapter 9: Ecology and Nature Conservation [APP-040] and Chapter 11: Human Health [APP-042], the Scheme avoids and mitigates all significant adverse effects on internationally, nationally and locally designated sites and other important ecological features such as protected species and habitats, and veteran trees, during the construction, operation and decommissioning phases, and no significant effects are concluded in relation to human health. The Scheme will also deliver other more localised economic, social and environmental benefits as set out in Chapter 14 Socio-economics and Land Use [APP-045], Chapter 15: Soils and Agriculture [APP-046] and Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040]. These include ecological enhancements, improvements to soil quality; improvements to the existing Public Rights of Way (PRoW) network through the provision of permissive paths; and significant employment generation during construction. Through careful design, detailed at Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035], the Scheme seeks to avoid and mitigate impacts on the environment and sensitive receptors, whilst ensuring that the Scheme will make a significant contribution to the UK's urgent requirement for the delivery of large amounts of new renewable energy generation capacity and infrastructure.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 (Assessment of Likely Impacts and Effects) in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire and that following operation, the agricultural land within the Scheme can revert back to arable management.</p> <p>The assessment of cumulative impacts of the Scheme with other developments in the locality is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. This concludes that apart from landscape and visual impacts, there would be no significant cumulative effects, including in relation to agricultural land and food production. Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] also considers cumulative effects with One Earth Solar Farm. No significant cumulative effects with One Earth Solar Farm have been identified.</p> <p>Section 4.5 of Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] sets out the methodology adopted in relation to the site selection process for the Principal Site. The Principal Site for the Scheme was chosen following a five stage process from the determination of an initial search area based upon considerations of irradiance (sunlight) and the identification of relatively low lying and flat topography to maximise energy generation within the east of England. From this baseline, a Point of Connection search was then undertaken by the Applicant. The search area was then refined through the application of exclusionary criteria based upon environmental and planning constraints. The availability and suitability of</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>previously developed land was also considered. From this stage, potential development zones were identified as shown in Figure 4-3 of the Environmental Statement [APP-146]. Each of the zones were then evaluated against potential impacts associated with ecology and biodiversity, landscape and visual, land use, cultural heritage, access, field shading, deliverability of grid connection and terrain. This concluded that all zones performed well against the criteria, and would be suitable for the Scheme, albeit with some zones more constrained than others. The least constrained zone (Zone A) was recommended for further consideration as the preferred location for the Scheme. This zone included land to the east and south-east of Gainsborough, which the Principal Site is located within.</p> <p>Zone A as shown in Figure 4-3 of the Environmental Statement [APP-146] contains land in which the Cottam Solar Project is located alongside the Tillbridge Solar Project. Gate Burton Energy Park and the West Burton Solar Project fall within Zone B. As mentioned above, the site selection process confirmed that Zones A and B were suitable for large scale solar projects. However, it was considered that Zone B was relatively more constrained than Zone A in terms of comprising more undulating land and containing more settlements and therefore receptors to be considered as part of the design process. On this basis, Zone A was the preferred zone used to then identify the Principal Site for the Tillbridge Solar Project. It should be noted that the site selection process for the Tillbridge Solar Project commenced in 2020, prior to the other solar projects (Gate Burton Energy Park, Cottam Solar Project and the West Burton Solar Project) being in the public domain. It is demonstrated that through these projects subsequently coming forward that the land falling within both Zones A and B of the Tillbridge site selection report (Figure 4-3) of the Environmental Statement [APP-146] are suitable for large scale solar projects.</p> <p>The ExA in its report to the Secretary of State agreed with the site selection process carried out in relation to the Gate Burton Energy Park, which the Secretary of State agreed with. The ExA confirmed at paragraph 3.2.85 that:</p> <p><i>“Whilst I note the concerns raised in relation to the understanding and interrogation of the site selection process I am satisfied that the methodology and information contained in the Environmental Statement is sufficient to provide for a proportionate and reasonable consideration of the available sites.”</i></p> <p>The ExA, in its recommendation report to the Secretary of State in relation to the Cottam Solar Project considered the site selection process by the Applicant confirming at paragraph 3.2.71 that:</p> <p><i>“Overall, we accept that the Applicant’s approach to site selection has helped to balance the generation of large amounts of low carbon renewable energy against the need to minimise the environmental impacts on its surroundings.”</i></p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>The Secretary of State agreed with the ExA's conclusions with the site for the Cottam Solar Project having been appropriately selected.</p> <p>The cumulative effects and inter-relationship of each project (Gate Burton Energy Park, Cottam Solar Project, West Burton Solar Project and the Tillbridge Solar Project) has been considered within each Environmental Statement and through the Joint Report on Interrelationships between Nationally Significant Infrastructure Projects that was submitted as evidence into each examination of the other solar projects.</p> <p>The cumulative effect of all four projects has been considered by each project. The ExA and the Secretary of State in granting development consent for the Gate Burton Energy Park [EN10131] and the Cottam Solar Project [EN10133] have already examined and concluded on cumulative effects. With respect to the Gate Burton Energy Park, the SoS at paragraph 4.89 of his decision agreed with the methodology used to consider cumulative effects taking into account the worst-case scenario and agreed with paragraph 3.14.20 of the ExA's report that:</p> <p><i>“Overall and I am satisfied that the combination of both effect interactions and cumulative effects between the short list of schemes in the locality have been taken into account in reaching my conclusions. The Applicant has sought to introduce collaboration with the developers of the other solar NSIP schemes, not least through the shared GCC which also facilitates shared communication and consultation potential and has sought to embed the potential for further collaboration in the fCTMP. Whilst there may be some effect interactions that would occur, for example, landscape and visual amenity and noise and vibration, I am satisfied that there are no significant effects from effect interactions between differing effects on receptors, such that would increase the intensity and magnitude of effect. I agree with the Applicant's conclusions of the assessment of cumulative effects where two significant cumulative effects are identified on landscape and visual receptors.”</i></p> <p>In applying the planning balance, the ExA at paragraph 5.3.13 of his report concludes that <i>“none of the matters which I have weighed against the Order being made, either in isolation or in combination, outweigh the significant benefits that I have identified.”</i> The Secretary of State agreed with this conclusion.</p> <p>The Cottam Solar Project Environmental Statement Chapter 23 [REP2-010] identified significant cumulative effects after embedded mitigation and mitigation measures have been applied with the ExA concluding on cumulative matters at paragraphs 3.13.30 of the recommendation report that:</p> <p><i>“We are satisfied that the Applicant has adequately assessed the likely significant effects of the Proposed Development cumulatively with other planned development and that the Environmental Statement includes</i></p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		Impact on Health & Wellbeing	<p>2. Impact on Health & Wellbeing: The TSP has the potential to have a significant detrimental impact on the general health and wellbeing of residents (rural mental health is a particularly important issue locally), depriving access to visual amenity, spoiling views, destroying agricultural jobs and livelihoods. There is the possibility of socioeconomic decline from the cumulative effect and size of these developments, which would then affect people's health and wellbeing, which then has the long-term potential to impact on health inequality. Such impacts have not been appropriately considered by the developer.</p>	<p><i>sufficient information on how the effects of the proposal would combine and interact with the effects of other development during construction, operation and decommissioning. Accordingly, we are satisfied that the requirements of the EIA Regulations, 2011 NPS EN-1 and 2024 NPS EN-1 are met."</i></p> <p>The SoS confirmed at paragraph 7.3 of his decision letter in relation to the Cottam Solar Project that he agreed with the ExA's conclusions in respect of cumulative effects and that despite these impacts that the benefits of the Proposed Development outweigh its adverse impacts. The SoS goes on to state at paragraph 7.6 of his decision that:</p> <p><i>"The Secretary of State does not believe that the national need for the Proposed Development as set out in the relevant NPSs is outweighed by the Development's potential adverse impacts,"</i></p> <p>Against the context above, the Planning Statement [AS-029] submitted in support of the Tillbridge Solar Project confirms at paragraph 7.4.34 that significant landscape and visual cumulative effects remain when the Tillbridge Solar Project is considered in combination with the other solar NSIPs. Whilst each development consent will be considered on its merits, in applying the overall planning balance, the recent approval of development consent for the Gate Burton Energy Park and the Cottam Solar Project are important and relevant in the consideration of the Tillbridge Solar Project. All three projects, either through ratification by the SoS in relation to the made DCOs or through the technical work submitted in support of the Tillbridge Solar Project agree that there are cumulative effects that attach negative weight. However, the made development consents agree that despite this negative weight, the benefit of the proposed developments is not outweighed by its adverse impacts confirming that development consent should be granted in both cases. In the case of the Tillbridge Solar Project, the primary policy consideration is its compliance with the designated Energy NPS. Given the critical national priority (CNP) to provide low carbon infrastructure, which includes the deployment of large-scale ground mounted solar, NPS EN1 (Ref 1-17) is clear at paragraph 4.2.15 that <i>"all but the most exceptional circumstances, it is unlikely that consent will be refused."</i></p> <p>Chapter 11: Human Health of the Environmental Statement [APP-042] assesses potential effects of the Scheme on health and wellbeing of local residents. The assessment takes a holistic approach to health and defines health in line with the World Health Organisation (WHO) Europe (Ref 1-37) and the IEMA guidance (Ref 1-24) as a <i>"state of complete physical, mental and social wellbeing not merely the absence of disease or infirmity"</i>. It considers a wide range of health determinants which are relevant to quality of life and amenity. The assessment considers elements of the Scheme which could affect mental health (for example changes in landscape and visual amenity, noise, access to open space and employment) as well as physical health (for example associated with air pollution and access to healthcare facilities). Section 11.8 of Chapter 11: Human Health of the Environmental Statement [APP-042] concludes that no significant adverse effects on human health will arise in relation to community</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>connectivity, and local land use and amenity as a result of the construction, operation and decommissioning of the Scheme. This is because there will be no permanent PRow closures, with temporary closures or diversions being managed in accordance with the Framework PRow Management Plan [APP-228], and the temporary nature of the construction works in relation to air quality and noise.</p> <p>The Applicant acknowledges that the operation of the Scheme will result in a residual significant adverse effect upon Local Landscape Character LLCA 3A Till Vale and a small number of visual receptors, as presented in Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043]. However, Section 11.8 of Chapter 11: Human Health of the Environmental Statement [APP-042] concludes that the likely effect on human health arising from impacts on landscape and visual amenity during the operation of the Scheme are not significant, given that a low number of residential receptors will be affected, and by operation year 15 it is likely that people will become used to the change in landscape and visual amenity and it will therefore have less of an impact on mental health and wellbeing.</p> <p>The Applicant has carefully designed the Scheme in consultation with stakeholders to ensure landscape and visual impacts are minimised as far as practicable by proposing a comprehensive landscape and ecological design which increases connectivity and local access through the landscape, with the inclusion of buffers from sensitive features and properties and the creation of new green infrastructure to provide screening and enhance the landscape condition as discussed in the Design and Access Statement [AS-031] and in the Framework Landscape and Ecological Management Plan [EN010142/APP/7.17(Rev 02)]. This design is illustrated on the Indicative Landscape Masterplan [EN010142/APP/7.19(Rev 02)].</p> <p>In relation to agricultural jobs and livelihoods, Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046] also undertakes an assessment of the Scheme in relation to farming circumstances and explains that several separate farm businesses occupy land within the Principal Site. It is acknowledged that during construction the land will not be available for grazing livestock or equestrian use, resulting in a temporary and negligible effect on farming circumstances, which is not significant. This negligible effect is short term and temporary. During operation, the Scheme's occupation of landowners' land, as a new diversified enterprise, will provide a new income stream independent of variations in profitability of arable production. This diversified enterprise may also enable managers of farm businesses that are currently too small to be economically viable, to wind up the farm business. This is assessed to result in a temporary moderate beneficial effect, which is significant, in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046].</p> <p>In terms of disruption during the construction, operational and decommissioning phases of the Scheme and in recognition of the potential for impacts on mental health that could arise from activities on site, and surroundings, there are measures set out in the Framework Construction Environmental Management Plan (CEMP) [EN010142/APP/7.8(Rev01)], Framework Operational Environmental Management</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>Plan (OEMP) [EN010142/APP/7.9(Rev01)] and Framework Decommissioning Environmental Management Plan (DEMP) [EN010142/APP/7.10(Rev01)] to reduce or avoid human health and wellbeing related impacts. This includes setting up a Community Liaison Group to enable local issues to be raised and considered. A Community Liaison Officer will be appointed to lead discussions with local communities, and also act as the primary point of contact should there be any queries or complaints. This mitigation will inform a detailed CEMP, OEMP and DEMP that will need to be approved by the Local Planning Authority prior to construction, and this is secured by Requirements 12, 13 and 20 respectively in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>Additionally, further details with respect to specific embedded mitigation measures relevant to minimising amenity impacts associated with traffic, noise and air quality are set out in Chapter 6: Air Quality [APP-037], Chapter 13: Noise and Vibration [AS-006] and Chapter 16: Transport and Access of the Environmental Statement [APP-047]. This includes in respect of potential impacts on mental health.</p> <p>In addition, Chapter 11: Human Health of the Environmental Statement [APP-042] concludes that there will be beneficial impacts on employment and income, prioritisation of walking and cycling routes (through new permissive paths) and climate change (through a substantial emissions reduction relative to the without-scheme baseline) during operation. These impacts will lead to positive effects on human health, including both physical and mental health.</p> <p>The cumulative impacts of the Scheme on human health are set out in Chapter 18: Cumulative Effects and Interactions [APP-049] of the ES. No significant effects are concluded on human health, during construction, operation and decommissioning. Any effects during the construction phase are temporary and short term, and will be mitigated by the measures set out in the management plans detailed above, alongside the measures taken by other Schemes in their own management plans, which are secured by each projects DCO. The Applicant acknowledges that the Scheme will have a cumulative significant impact on LLCA 3A Till Vale at year 15 of operation, and two significant visual effects at Viewpoint 7 on the B1398 Middle Street, Glentworth Cliff Farm and Viewpoint 13 at public footpath (Hems/787/2) on Lincoln Cliff, Hemswell at year 15 of operation, however, no significant cumulative impacts to amenity are concluded. Cumulative landscape and visual impacts will be managed in accordance with the relevant environmental management plans, including the detailed LEMP, which must be in substantial accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)].</p> <p>Overall, the impact of the Scheme on human health, on its own and cumulatively with other developments is considered to be not significant (refer to Chapter 11: Human Health [APP-042] and Chapter 18: Cumulative Effects and Interactions [APP-049] of the ES).</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		Adverse impact on visual aspect of landscape	3. Adverse impact on visual aspect of landscape: The proposed Tillbridge Solar Project would have a significant impact on visual amenity in its own right. The combined effect of four large solar farms in one area of Lincolnshire would be overwhelming; solar arrays would become a devastating, dominating feature of our landscape.	<p>The Applicant acknowledges that significant adverse landscape and visual effects of the Scheme (including cumulative) will arise, as presented in Chapter 12: Landscape and Visual Amenity Assessment [APP-043] and Chapter 18: Cumulative Effects and Interactions [APP-049] of the ES. Significant effects in isolation are likely from large-scale infrastructure projects (as recognised in NPS-EN-1 (Ref 1-17)) and require weighing in the planning balance against benefits of the Scheme.</p> <p>Whilst the Applicant acknowledges that significant operational (Year 15) cumulative landscape effects will arise for Local Landscape Character Area LLCA 3A Till Vale and a small number of representative viewpoints, the design of the Scheme has sought to limit these effects as far as practicable. Design development throughout the project process, including the provision of extensive mitigation measures, will limit significant visual impacts through undeveloped set-backs and woodland/hedge planting. Although significant landscape impacts will arise, these should be considered against the inclusion of extensive areas for biodiversity enhancement through the Principal Site. With reference to cumulative effects, mitigation includes the provision of an ecological buffer to panels within the Cottam Solar Project to the south; and a minimum of approximately 450 m separation through undeveloped land with no public access to panels within the Cottam Solar Project to the north. Intervisibility with the Gate Burton and West Burton projects is limited by spatial separation, with distance from panels within the Principal Site being approximately 4.5 km and 7.5 km respectively.</p> <p>At Year 15 of operation and when planting is sufficiently mature, intervisibility of the Scheme with other developments will largely be limited to the elevated representative viewpoints along the Cliff, with visual receptors on the lower-lying Till Vale being subject to screening through provision of mitigation planting as outlined in the Framework Landscape and Ecological Management Plan (LEMP) [EN010142/APP/7.17(Rev02)]. This design is illustrated on the Indicative Landscape Masterplan [AS-064].</p>
RR-001		Failure to mitigate loss of employment and livelihoods	4. Socio-economic: The Tillbridge Solar Project fails to describe how proposed development could mitigate the harm through loss of employment and livelihoods caused by the development or contribute to local planning policies and actions to remedy the underlying socio-economic situation.	<p>As set out in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045], in the operational phase, an estimated 11 net additional jobs will be created by the Scheme, and the Principal Site currently supports 10 jobs through agricultural activities. The total net employment effect is zero jobs in the operational phase as a result, meaning that employment lost is offset by employment gained.</p> <p>In the construction and decommissioning phases, the impact of employment generation on the local economy has been assessed to be a minor beneficial (not significant) effect at the local scale.</p> <p>The Framework Skills, Supply Chain and Employment Plan (FSSCEP) [APP-232], submitted as part of the Application, would, once implemented post-consent, deliver additional positive outcomes in terms of employment. This includes the Applicant seeking to maximise opportunities for investing in skills locally, local supply chain and businesses that can support the development of the Scheme and other solar projects in</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>the area. With specific regard to the Scheme's supply chain, the FSSCEP [APP-232] highlights the following opportunities:</p> <ul style="list-style-type: none"> • Opportunity 4 - The Applicant would investigate measures to promote take up of jobs generated by the Scheme by local people. The starting point will be engagement with Local Authorities and Job Centre Plus, in order to tap into existing local employment support networks. • Opportunity 5 - The Applicant would introduce initiatives to maximise the diversity of the workforce. This measure could relate to a variety of demographic or disadvantaged groups. The most appropriate target group(s) could be identified through consultation and research post-consent. • Opportunity 6 – maximising opportunities for local businesses for purchasing and contracts arising from the Scheme.
RR-001	Inadequate Public Consultation		<p>5. Inadequate Consultation: The Public Consultation was insufficient/inadequate. Information was lacking and misleading. In practice, levels of comprehension of information are limited. Therefore, those affected have been unable to gain understanding of the proposals.</p>	<p>The Applicant adopted a two-stage approach to its pre-application consultation. This consisted of an initial non-statutory consultation exercise which informed the development of the Scheme, followed by a continued period of non-statutory engagement leading up to a second stage of consultation - statutory consultation - which was delivered in accordance with the requirements of the Planning Act 2008 (PA 2008).</p> <p>The Applicant carried out the statutory consultation in accordance with its obligations set out in the PA 2008, with the Applicant's approach to statutory consultation being consulted on prior to consultation via the Statement of Community Consultation (SoCC) as required by section 47 of the PA 2008 and Regulation 12 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('EIA Regulations'). The Applicant consulted at an appropriate time in the Scheme's development and clearly set out its current proposals and the aspects upon which it was seeking feedback.</p> <p>The Applicant believes that the consultation materials were of a good quality and of suitable detail to enable consultees to provide feedback on the Scheme proposals at multiple points in the development of the Scheme design.</p> <p>Further information on the Applicant's approach to consultation and details of its consultation materials can be found in the Consultation Report [APP-021] and its appendices [APP-022 to APP-030].</p>
RR-001	Opposition from local Parishes & Councils		<p>6. Opposition from local Parishes & Councils: All local Parish Councils and Meetings that have expressed a view to date are opposed to the proposed developments. Development at this scale, against the express wishes of local councils and their communities is undemocratic.</p>	<p>The Applicant's responses to the relevant representations received from Parish Councils and Meetings are provided within Table 2-3 of this report. The Applicant's responses to relevant representations received from local authorities are provided within Table 2-2 of this report. Furthermore, the Applicant is in the process of developing Statements of Common Ground (SoCGs) with the local authorities. The following have been submitted at Deadline 1:</p> <ul style="list-style-type: none"> • SoCG with Lincolnshire County Council [EN010142/APP/9.9];

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		No consideration for community benefit	7. No consideration for community benefit: The Tillbridge Solar Project will provide power to the National Grid rather than local homes. It will displace agricultural jobs, provide few employment opportunities, and reduce local amenity, providing nothing in return.	<ul style="list-style-type: none"> • SoCG with West Lindsey District Council [EN010142/APP/9.8]; • SoCG with Nottinghamshire County Council [EN010142/APP/9.10]; and • SoCG with Bassetlaw District Council [EN010142/APP/9.11]. <p>The Applicant has considered a community benefit package as part of the Scheme. It is recognised that projects like the Tillbridge Solar Project can be disruptive to those living and working closest to it. The Applicant has engaged with both the Lincolnshire and Nottinghamshire community foundations and, should the Scheme receive development consent, the Applicant would provide a community benefit package.</p> <p>The Scheme stands to contribute towards the local economy and supply chain, this includes through the provision of jobs (both directly and indirectly) in the local area. The Applicant has considered a series of measures designed to maximise such local benefits. Further detail is provided in the Framework Skills, Supply Chain and Employment Plan (SSCEP) [APP-232].</p> <p>With regard to the potential for there to be displacement of agricultural jobs, as set out in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the Applicant acknowledges that during construction the land will not be available for grazing livestock or equestrian use, resulting in a temporary and negligible effect on farming circumstances, which is not significant. However, during operation, the Scheme's occupation of landowners' land, as a new diversified enterprise, will provide a new income stream independent of variations in profitability of arable production. This diversified enterprise may also enable managers of farm businesses that are currently too small to be economically viable, to wind up the farm business, resulting in a moderate beneficial effect. Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] also concludes that in the operational phase, an estimated 11 net additional jobs will be created by the Scheme, and the Principal Site currently supports 10 jobs through agricultural activities. The total net employment effect is 0 jobs in the operational phase as a result, meaning that employment lost is offset by employment gained. Therefore, there is no significant effect on employment caused by the Scheme's operation.</p> <p>The Scheme will also deliver other more localised local economic, social and environmental benefits. These include ecological enhancements, improvements to soil quality; improvements to the existing Public Rights of Way (PRoW) network through the provision of permissive paths; and significant employment generation during construction. Through careful design, detailed at Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035], the Scheme seeks to avoid and mitigate impacts on the environment and sensitive receptors, whilst ensuring that the Scheme will make a significant contribution to the UK's urgent requirement for the delivery of large amounts of new renewable energy generation capacity and infrastructure.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		Impact on communities and populations	8. Sustainability of Communities: Many small villages surrounded by the Tillbridge Solar Project have few opportunities for employment and very few amenities other than the open countryside landscape that it sits in. The scale of the TSP would rob villages of this key attribute and erode the attractiveness of villages, driving some people away and serving to deter people from moving in, therefore reducing their capacity to sustain communities and populations.	<p>The Applicant recognises that the operation of the Scheme will result in a residual significant adverse effect upon Local Landscape Character LLCA 3A Till Vale and a small number of visual receptors, as presented in Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043]. However, the Applicant has carefully designed the Scheme in consultation with stakeholders to ensure landscape and visual impacts are minimised as far as practicable by proposing a comprehensive landscape and ecological design which increases connectivity and local access through the landscape, with the inclusion of buffers from sensitive features and properties and the creation of new green infrastructure to provide screening and enhance the landscape condition as discussed in the Design and Access Statement [AS-031] and in the Framework Landscape and Ecological Management Plan [EN010142/APP/7.17(Rev02)]. This design is illustrated on the Indicative Landscape Masterplan [AS-064].</p> <p>Chapter 11: Human Health of the Environmental Statement [APP-042] concludes that the Scheme would only result in a low number of residential receptors that will be affected, and by operation year 15 it is likely that people will become used to the change in landscape and visual amenity and it will therefore have less of an impact on mental health and wellbeing. The Scheme, whilst negatively impacting on the landscape character and a small number of viewpoints, also includes the creation of new green infrastructure elements and corridors throughout, to increase habitat connectivity; enhance landscape condition; and improve visual amenity within sometimes degraded agricultural landscapes.</p> <p>In addition, Chapter 11: Human Health of the Environmental Statement [APP-042] finds minor beneficial impacts in relation to human health on the following:</p> <ol style="list-style-type: none"> a. employment and income, due to the creation of 138 jobs in the local area during the construction phase, equating to £7.9 million GVA generated within West Lindsey and Bassetlaw districts, b. prioritisation of walking and cycling routes, through the provision of new permissive paths connecting Common Lane to Northlands Road and Common Lane to Kexby Road, offering recreational access in an area where PRow are limited and also improving north-south off-road links; and c. climate change, through a substantial emissions reduction relative to the without-Scheme baseline. <p>These impacts will lead to beneficial effects on human health and, specifically, could lead to beneficial effects on mental health, which rather than reducing villages' capacity to sustain communities and populations, could in fact enhance people's experience of the local area.</p> <p>Regarding effects on local amenity, Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] finds that taking into account the residual effect assessment results of the air quality, noise, traffic and visual assessments, there are no residents, businesses or community facilities that would likely experience a</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001	Separation of communities in an industrial landscape	9. Separation of communities in an industrial landscape: The vast area of development proposed for the Tillbridge Solar Project is many orders of magnitude larger than any of the neighbouring villages, i.e. Glentworth, Hemswell, Springthorpe, Sturgate, Heapham Marton, Brampton, Sturton-by-Stow and Saxilby. This is compounded by there being 4 schemes within a close area, (which in total exceeds that of the City of Lincoln and its suburbs together with the town of Gainsborough) and would partition the countryside, segregating rural villages and placing them in an industrialised landscape.	<p>significant effect on their amenity during construction, operation or decommissioning from effects acting in combination as a result of a Scheme.</p> <p>In terms of the capacity of villages to sustain communities and populations, the Applicant's position is that the Framework Skills, Supply Chain and Employment Plan (SSCEP) [APP-232], would, once implemented post-consent, deliver additional positive outcomes to the jobs required to construct the Scheme. This includes the Applicant seeking to maximise opportunities for investing in local supply chain and businesses that can support the development of the Scheme and other solar projects in the area.</p> <p>With specific regard to the Scheme's supply chain, the Framework SSCEP [APP-232] highlights the following opportunities:</p> <ul style="list-style-type: none"> • Opportunity 4 - The Applicant could investigate measures to promote take up of jobs generated by the Scheme by local people. The starting point will be engagement with Local Authorities and Job Centre Plus, in order to tap into existing local employment support networks. • Opportunity 5 - The Applicant could introduce initiatives to maximise the diversity of the workforce. This measure could relate to a variety of demographic or disadvantaged groups. The most appropriate target group(s) could be identified through consultation and research post-consent. • Opportunity 6 – maximising opportunities for local businesses for purchasing and contracts arising from the Scheme. 	
				<p>The Applicant acknowledges that significant residual landscape and visual effects will arise from the Scheme both in isolation and cumulatively; and that elements of the Scheme will result in the presence of industrial features with a corresponding change in character, as set out in Chapter 12: Landscape and Visual Amenity Assessment [APP-043]; Appendix 12-6: LVIA Assessment of Visual Effects [APP-106]; and Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049].</p> <p>However, the design of the Scheme includes set-backs from villages and other sensitive features such as open space at Harpswell; and does not feature solar infrastructure adjacent to any existing PRow through the Principal Site. It is accepted that rural lanes are of recreational value around villages, but the Scheme design has sought to reduce visual effects along these lanes through the provision of new hedgerows, woodland belts, undeveloped set-backs and areas for biodiversity enhancement. Two new permissive paths—also with screening through planting—will be created, increasing north-south recreational opportunities within the Principal Site.</p> <p>With reference to cumulative effects and the nearest part of the Cottam Solar Project to the south, fields have been identified for ecological enhancement in order to provide an undeveloped, habitat-rich buffer.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001	Property blight		10. The Consent Order should ensure that the potential for properties and communities to be affected by blight is properly considered and potential remedies are available. Extensive industrialisation of the region by solar development at the scale of the Tillbridge Solar Project, with the associated reduction of green amenity space, employment opportunities and other harms, is likely to severely reduce the desirability of the region as a place to live (with a dramatic reduction in property value).	<p>In terms of property value, impacts on property prices are not a material consideration under section 104 of the Planning Act 2008, which sets out the matters the Secretary of State must have regard to, which includes the relevant National Policy Statements (NPS), which in this case are NPS EN-1 (Ref 1-17), NPS EN-3 (Ref 1-18) and NPS EN-5. None of these policy documents consider property prices, and this therefore should not be a factor which is considered by the Secretary of State when determining the Application.</p> <p>As noted in the response to Item 9 of [RR-001] above, the Scheme has been designed to limit landscape and visual effects on properties and communities, including through the use of early-stage consultation with residents to determine the extent of mitigation. The Scheme will not result in any loss of accessible green amenity space and will include the two new permissive paths, as stated above.</p>
RR-001	Inadequate landscape mitigation / screening		11. Inadequate mitigation / screening: The Tillbridge Solar Project proposes solar panels which would have a height of 3.5m as well as extensive security fencing. At that height, the character of the land would undoubtedly be dominated by solar panels, which could not be adequately screened by hedgerows (at all) or by trees (for many years). The developer proposes to re-evaluate landscape and visual effects periodically, post-construction, but it is not clear to what standard the developer must achieve with regard to mitigation, nor the consequences or remediation requirements should this not be achieved. Monitoring at 3 years would be inadequate, given the potential for plant losses in early months/years. Long-term re-assessment (e.g. at 10 years) represents a significant proportion of people's lives, should mitigation not be effective.	<p>As set out in the Outline Design Principles Statement [AS-058] the proposed deer fencing along the outer boundaries of the Principal Site will be maximum 2.5m in height and comprise timber posts and agricultural wire. The appearance of this is not considered to accord with typical 'security' fencing: such fencing (e.g. steel palisade) will only be located around critical infrastructure within the substations. A detailed Design Principles Statement which will be substantially in accordance with the Outline Design Principles Statement [AS-058] will need to be approved by the Local Planning Authority prior to construction, and any works related to the design of the Scheme will need to be carried out in accordance with the detailed Design Principles Statement, as secured by requirement 3 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>Hedges will be managed at between 2.5 and 3 metres height, as described in the Framework LEMP [EN010142/APP/7.17(Rev 02)]. Taller heights will be prescribed alongside routes such as roads through the Principal Site; details such as this will be confirmed through the final LEMP. The effect of a 2m high hedge is demonstrated in the representative viewpoint 17 (Figure 12-14 of the Environmental Statement [APP-187]) (Common Lane), where the existing minimum circa 2m high hedge is considered sufficient to screen the solar infrastructure, even during the winter months (refer to Figure 12-14 of the Environmental Statement [APP-187]). Although the Applicant acknowledges that significant residual visual effects will arise where views are available from elevated locations on the Cliff, it is considered that for the hedge heights proposed, mitigation (when managed at the heights stated above) from locations at lower elevations west of the Cliff will limit views.</p> <p>All management measures, including those that ensure that mitigation is successful, such as monitoring, are outlined within the Framework LEMP [EN010142/APP/7.17(Rev02)]. These will then be reviewed and agreed through consultation with stakeholders prior to being formalised in the final LEMP.</p> <p>Monitoring of all proposed and existing planting will be undertaken by the appointed Landscape Clerk of Works. As stated in the Framework LEMP [EN010142/APP/7.17(Rev 02)], this will be on an annual basis for the first 10 years,</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001	Impacts on cultural heritage and archaeology	12. Cultural Heritage & Archaeology: The area in which the Tillbridge Solar Development is proposed is dotted with rural historic parishes, within which many historic buildings remain, including several dating as far back as the Domesday Book. The impact of the proposed scheme to heritage and such cultural assets has not been adequately explored or mitigated.	<p>and every five years post-construction until the decommissioning stage. Further monitoring along a similar timescale will be provided by the Ecological Clerk of Works in respect of ecological mitigation measures. Any changes to these frequencies and timescales, along with standards of monitoring and maintenance, will need to be approved by the Local Planning Authority prior to the preparation of the detailed LEMP, and the detailed LEMP will be required to be submitted to, and approved by, the relevant Local Planning Authority in accordance with Requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>Monitoring will inform any required changes to management prescriptions and further remedial actions that may be required within the LEMP. This will include the selection of appropriate species that are observed to establish more rapidly than any that do not show predicted growths, as part of the replacement of failed plants.</p> <p>With respect to predicted tree growth, the assessment at Year 15 is based on tree planting predicted to be between around 4m and 6.5m in height and new and existing hedgerows will be managed and maintained between around 2.5m and 3m in height. These expected tree heights are conservative and have been developed with reference to published arboricultural research, including Forestry Commission.</p>	
RR-001	Traffic disruption	13. Traffic Disruption: The volume of road movements and size of vehicles, particularly during construction, maintenance and decommissioning are not compatible with the local, inadequate road infrastructure. Again, there is a cumulative affect with the potential for 4 major solar developments in the same region. The Tillbridge Solar Project does not adequately consider the impact of traffic through rural routes and villages and the potential for disruption, damage, and noise.	<p>The Framework Construction Traffic Management Plan (CTMP) [EN010142/APP/7.11(Rev02)] provides full details of embedded mitigation measures that are proposed to prevent or reduce potential adverse effects associated with construction traffic on local roads. A detailed CTMP (which must substantially accord with the Framework CTMP) will need to be approved post consent prior to construction with the relevant local authorities and this is secured by Requirement 14 in Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev 03)].</p> <p>As detailed in the Framework CTMP [EN010142/APP/7.11(Rev 02)], highway condition surveys will be undertaken before, during and after the construction to identify any damages which are as a result of the development that need to be remediated. Where</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>the pre-condition survey identifies that measures should be put in place to protect and maintain the road surface, the Local Highway Authorities (LHAs) will be consulted ahead of works being undertaken.</p> <p>Chapter 16: Transport and Access of the Environmental Statement [APP-047] includes a detailed assessment of the potential construction traffic impacts associated with the Scheme in terms of severance of communities, road vehicle driver and passenger delay, non-motorised user delay, non-motorised amenity, fear and intimidation on and by road users, road user and pedestrian safety and hazardous/large loads. Potential impacts due to road traffic noise are set out within Chapter 13: Noise and Vibration of the Environmental Statement [AS-006]. Cumulative effects and interactions between the Scheme and other solar DCOs within the surrounding area are assessed in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. This includes detailed analysis of the potential cumulative traffic and transport effects of the NSIP schemes.</p> <p>The Environmental Statement recognises that some significant adverse effects may arise due to construction traffic on the B1241, North of Fleets Road as a result of severance, pedestrian delay and changes in non-motorised user amenity. However, these effects only result due to the extremely low existing traffic flows, compared to the AM peak during construction, which is still 170 fewer two way trips than the existing baseline highway capacity on this part of the network. Therefore, there will still be enough capacity on the road for the construction traffic, but a significant impact is concluded due to the magnitude of change from existing flows compared to the flows during the AM peak of the construction period. In addition, these effects would only occur during construction and would be short term and temporary. Significant adverse effects have also been identified as a result of an increased sense of disturbance due to the combined effects from air quality, noise and vibration, transport and access, and landscape and visual impacts on Hermitage Low Farmhouse, Common Lane and the non-motorised users of A631 and School Lane. These effects would be limited to the construction phase, and would be mitigated as far as possible through the implementation of a detailed CTMP and CEMP, which will be substantially in accordance with the Framework CTMP [EN010142/APP/7.11(Rev02)] and Framework CEMP [EN010142/APP/7.8(Rev01)] and will need to be approved by the Local Planning Authority, as secured by requirement 14 and 12 respectively, of the draft DCO [EN010142/APP/3.1(Rev03)].</p>
RR-001		Food security	<p>14. UK Food Security: The land proposed to be developed for the Tillbridge Solar Project is productive arable land, as is the land associated with the three other large solar developments in the region. The impact of the Tillbridge Solar Project, and the cumulative impact of the 4 schemes on Food Security has not been considered, particularly in light of the circumstances of war, pandemic, crop disease and global warming (e.g. rising sea levels, which are predicted to inundate 30% of Lincolnshire's productive farmland by 2050) on national and global supply chains. The broad impacts of</p>	<p>Agricultural land quality was a key consideration in the Applicant's site selection process. As set out in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and the Design and Access Statement [AS-031].</p> <p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into account reductions to the Order limits following the Applicant's Change Application submitted in September 2024, for the Principal Site, 95.5% of the land used is non BMV</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>the loss of agricultural land have been highlighted by the House of Commons Environmental Audit Committee Report (29th November 2023).</p>	<p>land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is provided within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p> <p>As set out in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. All other infrastructure will be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a Decommissioning Environmental Management Plan (DEMP). In accordance with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)] submitted as part of the Application. The only potential permanent removal of land from agricultural use may result from proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However, the potential change of use of 0.07% of agricultural land that is BMV land to proposed woodland is not considered to be significant and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60 year operational period has the potential to accrue improvement to soil function over a large area. Whilst not food production, woodland presents benefits provided by the Scheme in terms of biodiversity and provides future opportunities for farm diversification.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 of Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire. Land can continue in agricultural production through the operational phase and that following operation, the land used for the Scheme can revert to current agricultural management.</p> <p>Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] assesses the loss of agricultural land in combination with all cumulative solar schemes (Gate Burton Energy Park, West Burton Solar Project and the Cottam Solar Project and others set out in Table 18-22 in Chapter 18 of the Environmental Statement [APP-049]). This confirms that in combination with all cumulative solar developments that there is still not a significant effect on agricultural production as a result of the</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>schemes. The area of agricultural land that would be temporarily taken out agricultural use across all four schemes would be 2.2% of agricultural land in Lincolnshire.</p> <p>The Applicant has also prepared a report setting out the cumulative effects of solar projects on BMV land within Lincolnshire, which is located at Appendix B of this document. This report further concludes that the potential permanent loss of BMV land in Lincolnshire as a result of solar DCO projects would be 0.8% and would be 0.27% as a result of ground mounted solar TCPA projects. This amounts to only 0.9% of all BMV land within Lincolnshire permanently lost to solar projects within Lincolnshire.</p> <p>The Secretary of State in his recent decisions for Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] recognised the local concerns on the loss of productive agricultural land but concluded that, on a cumulative basis alongside the other solar projects (including the Tillbridge Solar Project), that the cumulative assessments forming part of each application have suitably considered cumulative effects. The Secretary of State at paragraph 4.178 of the Gate Burton Energy Park decision states that the <i>“cumulative loss of BMV land in Lincolnshire due to NSIP solar projects amounts to 0.83% of the total BMV land with a further 0.21% loss to TCPA solar projects. The Secretary of State considers that this is only around 1% of the total BMV land in Lincolnshire, further noting that the land will be lost for a temporary, albeit long-term period and that the land can be returned upon decommissioning of development to its original state. The Secretary of State places great importance on BMV land but is satisfied that the siting of the Proposed Development on BMV land has been justified.”</i></p> <p>The Tillbridge Solar Project, through its site selection process sought to minimise impacts upon BMV land and through design iteration of the Scheme, has further minimised impacts. The siting of the Scheme on BMV land is justified and the loss of agricultural land and therefore potential food production would be temporary and reversible allowing the Principal Site to be brought back into agricultural use following decommissioning.</p> <p>In the recent Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] decisions, the Secretary of State (SoS), determined that the cumulative loss of BMV land across these two schemes, together with West Burton and the Tillbridge Solar Project, and therefore the potential impact upon agricultural land and food production, will be minor and would not impact food security when these four solar NSIPs are considered both individually and cumulatively. The SoS agreed with the ExA's recommendations on agricultural land use in considering the Gate Burton Energy Park. The ExA confirmed in its recommendation report at paragraph 3.11.114 that:</p> <p><i>“Whilst I appreciate the concerns of many IPs and the concerns expressed there is no meaningful assessment of the extent of lost production. Furthermore, given the national and regional figures identified by the Applicant in respect of cereal production even taking account of the whole site area there would be little discernible</i></p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001	Existing land productivity	15. Existing Land Productivity: Regardless of Agricultural Land Classification, the proposed area covered by the Tillbridge Solar Project is productive agricultural land, producing food for people and animals, as well as biofuels. The overall sustainability impact of displacing this production has not been considered, in terms of what production will be lost and the additional food miles and carbon impact of production being required elsewhere.	<p><i>effect. This would be true even in a cumulative scenario on the basis of the figures produced by the Applicant.”</i></p> <p>The House of Commons Environmental Audit Committee report referred to in RR-001 (being the Environmental Change and Food Security: second report of session 2923-04, 29 November 2023) does not cite solar farms on agricultural land as a threat to UK food security. Page 16 of the report notes three overarching pillars to the committee findings. These are:</p> <p><i>“We need to adapt our food and farming system to become more resilient to the effects of climate change and biodiversity loss.”</i></p> <p><i>“We must mitigate the impacts of climate change and biodiversity loss on our food system.”</i></p> <p><i>“We must mitigate the damage to the environment that aspects of our food system cause.”</i></p>	
RR-001	Impact on wildlife	16. Impact on wildlife: The details provided by the developer to date do not provide a thorough assessment of the potential harm to the ecology and biodiversity of the area, for example damage and disruption during construction, or noise during operation. In addition, Solar farm biodiversity net gain claims are unproven in the UK at this scale.	<p>The Scheme would require the repurposing of 1,212 ha of agricultural land, which equates to approximately 0.25% of the total agricultural land within Lincolnshire.</p> <p>The carbon saving realised by the operation of the Scheme, as detailed in the greenhouse gas (GHG) impact assessment within Section 7.8 of Chapter 7: Climate Change of the Environmental Statement [APP-038], is likely to significantly outweigh any increase in food transportation emissions (were a material increase to occur as a result of the Scheme, which the Applicant does not consider it will), especially with a view to the decarbonising of the transport sector. While any potential increase to food transportation emissions have not specifically been quantified within the GHG impact assessment of the Scheme, it is considered the impact will be minimal and not significant.</p> <p>It should also be noted that combinable crops are unlikely to be marketed and consumed within a local area or even a region of England. The UK both imports and exports wheat in most years. There is therefore likely to be no discernible effect of the proposed solar farm on food miles of arable crops. For such an effect to occur grain would need to be processed at a local mill for sale in local outlets, where any tonnage concerned would be marginal. Regardless, lamb fattened by grazing in the solar farm could be butchered and marketed locally.</p> <p>The Applicant has undertaken detailed ecological surveys to understand the habitats and species present. Full details of these surveys are provided in Table 9-11 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with further details set out in Appendices 9-1 to 9-12 of the Environmental Statement [APP-081 to APP-094] and [EN010142/APP/6.2(Rev01)].</p> <p>A detailed assessment of the potential impacts of the Scheme on biodiversity is presented in Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with particular reference to Tables 9-14 and 9-15. This includes</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001	Nature of the Scheme is not truly temporary		17. Nature of the scheme is not truly temporary: An operational period of 60 years, plus an additional decade construction and decommissioning, would result in a life-cycle of the development of around 70 years - which could never be classed as temporary.	<p>loss, damage and degradation of habitats and displacement and disturbance to species during construction, where relevant. It also includes consideration and assessment, where appropriate, of operational noise sources.</p> <p>The Applicant has carefully designed the Scheme to avoid or minimise adverse effects to biodiversity, with substantial mitigation measures embedded and detailed in Table 9-13 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040].</p> <p>The assessment concludes that there will be no significant adverse effects on biodiversity, with significant beneficial effects to a variety of habitats as a result of the landscape proposals introduced by the Scheme, including broad-leaved woodland, running water, hedgerows and species, including breeding birds, particularly farmland birds associated with hedgerows and field margins.</p> <p>As set out in the Biodiversity Net Gain Report [AS-062], the Scheme is predicted to deliver a net gain of 64.44% for area-based habitat units, 17.28% for hedgerow units, and 22.94% for watercourse units. The Applicant has committed to achieving a minimum level of BNG through the Scheme, as secured by both requirements 7 (landscape and ecological management plan) and 8 (biodiversity net gain) of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. Requirement 8 provides that construction cannot commence until a BNG strategy has been submitted and approved by the relevant planning authority, in consultation with the relevant statutory nature conservation body (being Natural England). The BNG strategy must be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)], which states at paragraph 4.6.2 that the Applicant is committed to achieving a minimum of 10% BNG, in accordance with the terms of the Biodiversity Net Gain Report [AS-062].</p> <p>This approach is consistent with that adopted in the Gate Burton Energy Park Order 2024 [EN010131], which the Secretary of State (agreeing with the Examining Authority) confirmed is an appropriate mechanism for securing BNG (refer to paragraphs 4.13 and 7.4 of the Secretary of State's Decision Letter and paragraph 5.2.14 of the Examining Authority's Recommendation Report).</p> <p>The draft DCO [EN010142/APP/3.1(Rev 03)] applies for a time-limited consent as set out within Schedule 2, Requirement 20. As such, the Scheme cannot continue indefinitely and is therefore temporary. The Scheme is also reversible after its lifetime and in that respect is a long term, temporary use.</p> <p>The temporary and reversible nature of a solar NSIP with 60 year consent has also been acknowledged in the Secretary of State's decisions on Gate Burton Energy Park and Cottam Solar Project, which have both been approved.</p> <p>NPS EN-3 (Ref 1-18) also supports this position at paragraph 2.10.66 which states that: <i>"time limited consent, where granted, is described as temporary because there is a finite period for which it exists, after which the project would cease to have consent and</i></p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		Scale of effects	18. Scale Effects: The project design fails to consider or mitigate the impact of the huge area of the Tillbridge Solar Project, which dwarfs the neighbouring villages.	<p><i>therefore must seek to extend the period of consent or be decommissioned and removed.”</i></p> <p>The Government has identified through its energy policy, most recently in the Overarching National Policy Statement for Energy EN-1 and National Policy Statement for Renewable Energy EN-3, that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p> <p>The Scheme will deliver large amounts of cheap, secure and low-carbon electricity both during and beyond the critical 2020s timeframe. Maximising the capacity of generation in the resource-rich, well-connected and technically deliverable proposed location for the Scheme, represents a significant and economically rational step forwards in the fight against the global climate emergency.</p> <p>The Applicant has undertaken an Environmental Impact Assessment (EIA) of the Scheme, which is reported within the Environmental Statement [APP-031 to APP-208] submitted with the Application. The Environmental Statement provides an assessment of the effects of the Scheme on sensitive environmental receptors and resources and outlines mitigation proposed to avoid, minimise, restore and offset any impacts of the Scheme. All mitigation proposed is summarised within the Environmental Mitigation and Commitments Register [APP-209].</p> <p>With respect to the relationship between the Scheme and adjacent villages, the design has been amended throughout the Application process. This has included the withdrawal of the Order Limit boundaries and solar panel areas further west from Harpswell and Glentworth; and east from Springthorpe. The provision of new hedgerows and woodland belts, along with undeveloped areas for biodiversity mitigation and enhancement, is intended to further limit landscape and visual effects from locations and areas close to these settlements.</p>
RR-001		Lost appeal for visitors / tourism / new people	19. Lost appeal for visitors / tourism / new people: Development at the scale of the Tillbridge Solar Project would alter the character and appeal of the region to attract visitors, tourists, or new people to the region, particularly when considered in the context of the 4 proposed large solar developments. The development would form part of a solar complex that would be clearly visible from historic buildings, such as Lincoln Castle. The project has failed to assess the potential impact of the development in this important regard.	<p>The Principal Site is not located within an area adjacent to visitor attractions and as such, the Scheme is not considered to impact on tourism. It is also noted that the Planning Inspectorate's EIA Scoping Opinion [APP-052] did not identify that such an assessment was required.</p> <p>Chapter 8: Cultural Heritage of the Environmental Statement [APP-039] provides an assessment of effects of the Scheme on designated and non-designated heritage assets and their setting, as well as setting out mitigation measures. Lincoln Castle is located over 9.5km south of the Principal Site and the Scheme would not be visible from this location.</p> <p>Regarding effects on local amenity, Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] assesses the impact of the Scheme on local</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001	Impact on leisure and tourism	20. Impact on Leisure & Recreation: There is an extensive network of footpaths, bridleways and isolated rural roads within the area covered by the Tillbridge Solar Project, which are used for walking, cycling, and horse-riding. The direct impact of the Tillbridge Solar Project, and the combined impact of the 4 proposed large solar projects on leisure and recreation have not been adequately considered.	land use and amenity. The assessment concludes that, taking into account the residual effect assessment results of the air quality, noise, traffic and visual assessments, there are no residents, businesses or community facilities that would be likely to experience a significant effect on their amenity during construction, operation or decommissioning from effects acting in combination.	<p>Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] assesses effects of the Scheme on PRow as a recreational resource.</p> <p>During construction and decommissioning, there will not be any permanent PRow closures although some minor diversions are likely to be required to provide safe access across the Order limits whilst construction and decommissioning activities are taking place, with PRow to be diverted or managed with a banksman (or similar). These diversions will be temporary and are expected to be short term.</p> <p>During the operation of the Scheme, no permanent closures or diversions to PRow are proposed. Permissive Paths to enhance the current PRow network will also be provided as part of the Scheme, with one route connecting Common Lane to Kexby Road, and the second route connecting Common Lane to Northlands Road. This will offer recreational access in an area where PRow are limited and will also improve north-south off-road links. The Permissive Paths will be located within 25 m wide corridors that will allow sufficient space for planting such as hedgerows to screen solar infrastructure and offer biodiversity and visual interest to users. A minor beneficial effect is expected due to the provision of additional permissive pathways.</p> <p>The Framework Public Rights of Way Management Plan [APP-228] outlines how PRow will be managed during the construction, operation and decommissioning of the Scheme. The measures contained within this document (Section 3) will help to ensure the ongoing operation of PRow in the local area in terms of user safety and accessibility. A detailed PRow Management Plan will be approved post consent prior to construction by the relevant local authorities, and this will be required to be substantially in accordance with the Framework PRow Management Plan [APP-228], as secured by Requirement 16 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>In addition, the Framework LEMP [EN010142/APP/7.17(Rev02)] sets out measures to mitigate and enhance the experience of users of PRow through the provision of buffers around PRow to include species rich grassland, and the potential to provide orchard trees close to PRow and permissive paths. A detailed LEMP will be approved post consent prior to construction by the relevant local authorities, and this will be required to be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)], as secured by Requirement 7 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>With the implementation of the Framework PRow Management Plan [APP-228] and the Framework LEMP [EN010142/APP/7.17(Rev02)], no significant effects on PRow as a recreational resource have been identified within Chapter 14: Socio-economics</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001	Cumulative impact of the Scheme	21. Joint consideration of schemes: Because of the unprecedented nature of this development and the significant impact on the area and communities, the four NSIP solar projects should be considered together by the Planning Inspectorate, i.e. Cottam Solar Project, West Burton Solar Project, Gate Burton Energy and Tillbridge solar.	<p>and Land Use of the Environmental Statement [APP-045] from the Scheme on its own or within Section 18.15 of Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] cumulatively with other developments.</p>	<p>The Applicant agrees with this comment.</p> <p>The assessment of cumulative impacts of the Scheme with other developments in the locality is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. The Scheme and other solar DCOs have worked collaboratively during design development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures.</p> <p>Further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is also provided in the Joint Report on the Interrelationship with other Nationally Significant Infrastructure Projects [APP-215 to APP-217].</p> <p>The cumulative effects and inter-relationship of each project (Gate Burton Energy Park, Cottam Solar Project, West Burton Solar Project and the Tillbridge Solar Project) has been considered within each Environmental Statement and through the Joint Report on Interrelationships between Nationally Significant Infrastructure Projects that was submitted as evidence into each examination of the other solar projects.</p> <p>In view of the above, all four projects have considered the impact of each project in combination with the other. The Secretary of State, in granting development consent for both the Gate Burton Energy Park [EN010131] and the Cottam Solar Project [EN010133] confirmed that the Applicants had adequately assessed the likely significant effects of the Proposed Developments cumulatively with the other planned developments. In reaching a decision on the Tillbridge Solar Project, the Secretary of State has sufficient information to consider cumulative effects of the Scheme in combination with the other solar DCOs.</p> <p>The Applicant expects the Examining Authority and Secretary of State to take the findings of the cumulative assessment into account in their decision making, along with consideration of the recent decisions (Gate Burton Energy Park [EN010131] and the Cottam Solar Project [EN010133]) as important and relevant matters in decision making.</p>
RR-001	Failure to consider neighbourhood plans	22. Failure to consider neighbourhood plans: The project does not consider the detailed work by communities in developing approved neighbourhood plans, including, for example aspirations for green spaces, open landscapes and the rural nature of villages.	<p>The Planning Statement [AS-029] provides an assessment of the Scheme against the relevant policies of all existing neighbourhood plans. The Scheme has been developed to address the policy considerations set out in these plans through its design, avoiding sensitive areas and limiting adverse impacts, where practicable.</p>	<p>With regards to landscape effects specifically, Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043] includes a comprehensive review of the existing (baseline) landscape, including neighbourhood plan policies and supporting evidence base documents. These have informed the design of the Scheme,</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001	Displacement of farmland	23. Policy Landscape: While there is a clear case for solar playing a role in decarbonisation, there is no clear case for extensive displacement of farmland through the installation of large-scale ground-mounted solar farms.	<p>for example with reference to key views from Harpswell Hall open space and associated areas of open access; and views identified from Glentworth. As with any large-scale infrastructure project, significant landscape and visual effects have been identified (NPS-EN-1 (Ref 1-17) at paragraph 5.10.13 expressly recognises that all proposed energy infrastructure is likely to have visual effects for many receptors, for example) and it is acknowledged that screening the Scheme from Middle Street will result in the loss of views that are reflected in neighbourhood plans. Any significant landscape and visual effects require weighing in the planning balance and should be considered alongside benefits for green infrastructure such as new and enhanced planting/ecological areas that can locally benefit the landscape.</p> <p>An assessment of the planning balance is provided within Planning Statement [AS-029]. It concludes that in terms of the overall planning balance, the clear and substantial benefits of the Scheme clearly outweigh any residual adverse effects, which would be localised, short-term, temporary and/or reversible at the end of the Scheme's lifetime.</p>	<p>The Government has identified through its energy policy, most recently in the NPS EN-1 (Ref 1-17) and NPS EN-3 (Ref 1-18), that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK.</p> <p>As discussed in the Statement of Need [APP-210], the Applicant recognises that energy alternatives such decentralised energy generation on roof tops or brownfield land for example, which is an alternative to large scale ground mounted solar farms has an important role to play in decarbonisation. However, on their own, smaller scale solar, including rooftop solar, and solar on brownfield land are not likely to deliver a sufficient total capacity at the required pace and at an affordable cost to meet the Government's targets. As set out in the Statement of Need [APP-210], due to technological advances, solar facilities are already among the cheapest form of electricity generation in the UK and larger solar schemes, such as the Scheme, deliver power more quickly and at a lower unit cost than multiple independent schemes which make up the same total capacity, bringing forward carbon reduction and economic benefits in line with government policy. The Government recognises in NPS EN-1 (Ref 1-17) that growth in large scale solar schemes, alongside smaller schemes of solar or other renewable energy sources, is expected to improve the dependability of those assets as a combined portfolio, contributing to an adequate and dependable UK generation mix required to meet the UK's energy security needs, and the decarbonisation needs of the UK. Whilst rooftop/brownfield solar and other smaller scale energy schemes are likely to contribute to decarbonisation, large-scale solar is still an essential part of the future electricity system, that must be deployed where there is the natural resource, where land is available and suitable, and in proximity to available grid connection locations, such as the area local to the Scheme, in line with NPS EN-1 (Ref 1-17).</p> <p>The effect of the Scheme on agricultural land with regards to food production (displacement of farmland) has been considered in Section 14.8 (Assessment of Likely Impacts and Effects) in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001	Failure to follow the National Policy Statements	24. Failure to Follow NPS: The proposed project has failed to follow the requirements of the National Policy Statements in a number of areas.	construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire and that following operation, the land used for the Scheme can be reverted to agricultural land.	<p>The relevant NPSs in respect of the Scheme are NPS EN-1 (Ref 1-17), NPS EN-3 (Ref 1-18) and NPS EN-5. Section 6 and Appendix A of the Planning Statement [AS-029] demonstrate that the Scheme is in accordance with these national policy statements.</p> <p>Paragraph 4.2.15 of NPS-EN-1 (Ref 1-17) makes it clear that that “<i>residual [non-HRA] impacts are unlikely to outweigh the urgent need for this type of infrastructure</i>” and that “<i>in all but the most exceptional circumstances, it is unlikely that consent will be refused on the basis of these residual impacts</i>”.</p> <p>In this case, it is very clear that the extent and nature of the residual impacts do not trigger the exceptional circumstance set out in national planning policy to refuse consent. As demonstrated in Section 6 and Appendix A of the Planning Statement [AS-029] the design development of the Scheme has followed the mitigation hierarchy, and all residual effects have been reduced as far as practicable through good design. The key residual adverse impacts of the Scheme relate to effects upon landscape character, limited, localised landscape and visual impacts, and minor harm to designated heritage assets.</p> <p>With this context in mind, it is considered the presumption in NPS EN-1 (Ref 1-17) is firmly engaged in favour of granting development consent, to deliver CNP infrastructure. By contrast to the few residual adverse effects, the benefits of the Scheme are very substantial (in terms of climate change) and significant (in terms of ecology and nature conservation) at both a national, regional and local level, leading to an overwhelming balance in favour of granting development consent for the Scheme. In terms of S104(7) of the PA 2008, the benefits of the Scheme this clearly and decisively outweighs its limited and localised adverse impacts.</p>
RR-001	Pressure on Land Use	25. Pressure on Land Use: Many planning requirements call for effective land use, the re-use of brownfield sites and avoiding BMV crop land. The Tillbridge Solar Project uses no brownfield sites. Given the limited contribution to decarbonisation and the adverse consequences arising from using farmland at this scale, the Tillbridge Solar Project represents a grossly inefficient use of land in the face of ever-increasing pressures on its use.	NPS EN-3 (Ref 1-18) provides specific design policies for solar development and recognises that there are a number of factors when considering the design and layout of large-scale ground mounted solar PV sites. Paragraph 2.10.17 outlines the requirements of solar farms, highlighting that a solar farm requires between 2 to 4 acres for each MW of output, with a typical 50MW solar farm consisting of around 100,000 to 150,000 panels covering between 125-200 acres. However, this may vary significantly. As set out in the Statement of Need [APP-210] , the site selection process for the Scheme included an assumption in favour of a contiguous site to allow the development of a cohesive design, and to derive a site that was sufficient to reflect the power output reflective of the Bilateral Connection Agreement with National Grid. This meant that the site selection process resulted in the Scheme being firmly within the range of expected site size for the expected MW output. As such the Scheme is within the estimated land use requirements for a solar farm set out within NPS EN-3 (Ref 1-18), Paragraph 2.10.17.	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001	Improper Agricultural Land Classification	<p>26. Agricultural Land Classification: The group does not have confidence in the Agricultural Land Classification data published by developers following significant changes in other developers' ALC figures. Given the margin for potential changes, it is imperative that there is an independent soil analysis conducted to establish the accurate picture and to be certain of the methodology that has been followed. Aside from the sub-classification of land between 3a and 3b, there has also been debate within the Government that all grade 3 land should be included in BMV. The application of the ALC classification only is flawed as it does not consider crop yield.</p>	<p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into account reductions to the Order limits following the Applicant's Change Application submitted in September 2024, for the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is provided within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p> <p>As set out in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. All other infrastructure will be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a Decommissioning Environmental Management Plan (DEMP). In accordance with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)] submitted as part of the Application. The only potential permanent removal of land from agricultural use may result from proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However, the potential change of use of 0.07% of agricultural land that is BMV land to proposed woodland is not considered to be significant and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60 year operational period has the potential to accrue improvement to soil function over a large area.</p>	<p>The ALC assessment presented within Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046] follows Natural England guidance given in their technical information note Agricultural Land Classification: protecting the best and most versatile land (TIN049) (Ref 1-1). The assessment presented has been reviewed by Natural England, the statutory consultee on this issue, that retains a number of ALC specialists. The Applicant is in the process of developing an SoCG with Natural England [EN010142/APP/9.19], which covers comments on the assessment presented within Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046]. The latest version of the SoCG with Natural England [EN010142/APP/9.19] is submitted at Deadline 1.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		Failure to consider alternative sites	27. Failure to consider alternative sites: The proposed project fails in that reasonable alternatives have not been adequately considered, as is required by the EIA regulations and the National Policy Statements.	<p>The Applicant has set out its rationale for selecting the Principal Site and Cable Route Corridor in Chapter 4: Alternatives and Design Evolution within the Environmental Statement [APP-035], in accordance with Schedule 4 of the Infrastructure Planning (Environmental Impact Assessment) (EIA) Regulations 2017 (Ref 1-35) and the requirements of NPS EN-1 (Ref 1-17). This explains the stages and the main considerations which have influenced the Applicant in how it has selected the land for the Scheme.</p> <p>For the Principal Site, this consisted of a five-stage process:</p> <ul style="list-style-type: none"> • Stage 1 consisted of determining the search area for a site to accommodate the Scheme defined by the available grid connection at the National Grid Cottam substation. • Stage 2 consisted of refining the search area to identify the presence/absence of key environmental and planning constraints. • At Stage 3, areas of land were identified as potentially suitable to accommodate a proposed solar development. • Stage 4 included a desktop assessment of the zones identified at Stage 3 to consider the suitability of each zone. • At Stage 5, the location of the Principal Site which forms the basis of this Application was identified. <p>Throughout the site selection process for the Principal Site, the Applicant has sought to avoid environmental and land use constraints and taken into consideration other criteria such as network connection; topography; field pattern and arrangement; land use conflict, as well as land availability. This process has continued through the design evolution of the Scheme, which has sought to locate elements of the Scheme appropriately across the Principal Site to avoid impacts.</p> <p>The Cable Route Corridor has been designed in collaboration with the developers of Cottam Solar Project, Gate Burton Energy Park, and West Burton Solar Project, to derive a shared Cable Route Corridor in order to minimise impacts through design.</p>
RR-001		Misuse of NSIP process	28. Misuse of NSIP process: Given the load factor of solar in the UK and the intermittency of power produced – and the fact that the development would provide no power when the country would most need it on winter evenings (i.e. it could not be relied upon when needed), its status of “National Significance” or strategic importance is questionable, and it is therefore a misuse of the NSIP process to develop the project in this way.	<p>The PA 2008 (Ref 1-31) provides the legislative basis and defines the application process under which consent for NSIPs is sought. The Scheme is defined as an NSIP under Section 14(1)(a) and 15(2) of the PA 2008 as it meets the following criteria:</p> <ul style="list-style-type: none"> • The Scheme comprises the construction of a generating station (Section 14(1)(a) of the PA 2008); • It would be located in England (Section 15(2)(a) of the PA 2008); • It would not generate electricity from wind (Section 15(2)(aa) of the PA 2008); • It would not be an offshore generating station (Section 15(2)(b) of the PA 2008); and • Its capacity would be more than 50 MW (Section 15(2)(c) of the PA 2008). <p>The PA 2008 requires a DCO to be obtained for the development of NSIPs, therefore the Applicant submitted a DCO application for the Scheme in April 2024, and the Scheme was accepted for Examination by the Planning Inspectorate in May 2024. This</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		Failure to meet threshold to allow for compulsory purchase	29. Compulsory Purchase: Given the flawed arguments surrounding the potential benefits of the TSP development, as well as the failure of the developer to consider alternatives which would have fewer adverse impacts, the TSP does not meet the necessarily high threshold to allow compulsory purchase.	<p>means that the Planning Inspectorate accept that the Scheme is classed as an NSIP, in accordance with the PA 2008.</p> <p>The Statement of Reasons [AS-047] sets out in detail why it is necessary, proportionate and justifiable for the Application to seek powers to acquire land compulsorily, create and compulsorily acquire new rights over land and impose restrictions, and extinguish or override existing rights over land, as well as powers to take temporary possession of land to construct and maintain the Scheme. The Applicant considers that the clear benefits provided in respect of new renewable energy generation and meeting of the Government's net zero targets meet the compelling public interest test for this acquisition. Paragraph 5.4 within the Statement of Reasons [AS-047] further sets out the alternatives pursued to compulsory acquisition.</p>
RR-001		Accuracy and fullness of information provided by the developer	30. Accuracy and fullness of information provided by the developer: Supporting information provided by the developer's consultants and experts is partial and fails to objectively consider all aspects and implications of the development.	<p>An Environmental Impact Assessment (EIA) of the Scheme has been carried out in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 and is reported within the Environmental Statement (ES) [APP-031 to APP-208] submitted with the Application. An EIA is a systematic process that examines the potential significant effects on the environment resulting from the construction, operation and decommissioning of a development, and allows for the identification of measures to prevent, reduce or offset any adverse effects and to enhance any beneficial effects.</p> <p>The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, regulation 14(3)(b) states that the Environmental Statement must: "<i>include the information reasonably required for reaching a reasoned conclusion on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment;</i>". As such, the Environmental Statement is not expected to consider "all aspects and implications" of the Scheme but would focus on impacts of the Scheme that may result in significant effects. The scope of the ES, including the aspects to be covered, were consulted on with the Planning Inspectorate via the EIA Scoping process. The Environmental Statement has been prepared in accordance with the Planning Inspectorate's EIA Scoping Opinion [APP-052].</p> <p>The Environmental Statement [APP-031 to APP-208] that accompanies the Application has identified all likely significant effects associated with the Scheme and cumulatively with other developments. The preliminary conclusions of the EIA were consulted on as part of the statutory consultation process and ongoing technical engagement has been undertaken with statutory bodies to refine assessment conclusions and mitigation requirements. Where potentially significant effects have been identified, the Applicant has identified measures to mitigate these impacts, as far as practicable. The Environmental Statement should be read alongside the Environmental Statement Addendum [AS-057] which the Applicant submitted in September 2024 in support of a request of changes to the Application. The Applicant considers the EIA undertaken for the Scheme as presented within the Environmental Statement and Environmental Statement Addendum is robust. It is worth noting that the</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		Combined impact of concentrated energy development in a single area	31. Combined impact of concentrated energy development in a single area: The combined impact of all solar developments in the region (NSIP and locally determined developments) would take a significantly higher proportion of land locally than the national average figure quoted by solar developers to illustrate how little land would be used by solar, thus the impact on the region would be disproportionate.	<p>Planning Inspectorate, in deciding to accept the Application for examination, has not raised concerns with the adequacy of the Environmental Statement provided.</p> <p>Cumulative effects and interactions between the Scheme and other developments, including other solar DCOs are also assessed in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. In addition, further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is provided in the Joint Report on the Interrelationship with other Nationally Significant Infrastructure Projects [APP-215 to APP-217].</p> <p>As set out within Section 18.15 of Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049], the cumulative land take of the Scheme alongside other solar developments would be up to 2.2% of all agricultural land in Lincolnshire. This represents a very small proportion of the total agricultural land in Lincolnshire and is not considered to be significant.</p>
RR-001		Limited benefits of solar	32. Limited benefits of solar (load factor & timing): that matching electricity supply with demand in the moment is an essential part of electricity supply, the TSP cannot deliver on claims to power approximately 300,000 homes owing to the low overall load factor for solar power in the UK, along with its intermittency and seasonal variation in output.	<p>While the Applicant recognises that solar power has a variable load factor due to its intermittent nature, advancements in energy storage and grid management technologies are effectively addressing these issues and as a result the Applicant can reasonably expect to be able to deliver power to 300,000 homes. The integration of Battery Energy Storage Systems (BESS) within the Scheme and the grid as well allows for the storage of excess solar energy, balancing supply with demand and enhancing reliability. Additionally, solar power contributes significantly to reducing carbon emissions, and combined with other renewable sources, it plays a crucial role in meeting energy needs and the Government's sustainability goals, as reflected in the Government's support of solar technology in policies NPS EN-1 (Ref 1-17) and NPS EN -3 (Ref 1-18).</p>
RR-001		Need for the Scheme	33. Extensive ground-mounted solar is not necessary to deliver the UK Government's 70GW ambition for solar capacity: To reach the Government's target for solar capacity, extensive ground-mounted solar is not necessary; for instance, Germany has already installed 80GW of solar capacity, with 70% or more on rooftops, and without a single ground-mounted scheme even half the size of Tillbridge Solar. Given the untapped resource of solar on domestic rooftops (only 3% of domestic properties have solar panels in the UK) and commercial properties (which, alone could double the UK's current solar capacity), there is no clear case for uncontrolled development of large scale, ground-mounted solar farms such as the Tillbridge Solar Project.	<p>The UK Government has identified through its energy policy, most recently in the NPS EN-1 (Ref 1-17) and NPS EN-3 (Ref 1-18), that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology.</p> <p>Developing the Scheme at its proposed size will be an important contribution to meeting this need. As discussed in the Statement of Need [APP-210], the Applicant recognises that decentralised energy generation on roof tops has an important role to play in decarbonisation, however on its own, smaller scale solar, including rooftop solar, is not likely to deliver a sufficient total capacity at the required pace (given the greater complexity in securing sites and connections) and at an affordable cost to meet the Government's Net Zero targets and timeframes. Whilst rooftop solar is likely to contribute to decarbonisation, large-scale solar is still an essential part of the future electricity system, that must be deployed where there is the natural resource, where land is available and suitable, and in proximity to available grid connection locations, such as the area local to the Scheme.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		Excess renewable energy generation	34. Questionable net effect of solar on CO ₂ policy objective of allowing uncontrolled solar development: Uncontrolled development of large-scale solar farms such as the Tillbridge Solar Project has the potential to create significant periods of excess renewable generation, where, without sufficient long-term seasonal energy storage, there will be much greater levels of “curtailment” – where production is switched off as there more generation than demand. The incremental effect of “too much” solar will therefore diminish the potential power contribution the scheme may make and also the CO ₂ policy objectives from each scheme.	<p>If the DCO is granted for the Scheme, it is legally bound by the Articles and Schedules set out within the development consent order. The DCO is a statutory instrument. This means that the Applicant will be bound by the provisions set out in the Order. This includes measures relating to the construction, operation, maintenance and decommissioning of the generating station ensuring that no new or materially different environmental effects arise from those assessed in the Environmental Statement forming part of the Application. The development consent will also secure environmental mitigation and commitment measures secured by requirements (conditions) that will be attached to the development consent. The requirements will secure detailed management plans to be substantially in accordance with the framework management plans that form part of the Application. These framework plans, along with the Environmental Statement that form part of the Application set out the likely significant effects of the Scheme on a range of environmental topics. This will be examined by the Examining Authority, and Secretary of State, who will balance the need and benefits of the Scheme against harm. If consent, the Scheme must be constructed, operated, maintained and decommissioned in full accordance with the requirements, articles and provisions in the DCO or it will be unlawful. The Scheme will therefore not be uncontrolled and will be an enforceable development stringently controlled through the provisions of the statutory instrument.</p> <p>As the UK moves towards net-zero 2050, it is important that the electrical grid is supported by both variable generation sources (e.g. solar/wind) and dispatchable generation sources (e.g. gas fired turbines with carbon capture). This, combined with increased energy storage systems and grid connectivity, will work to address current issues of curtailment as indicated by the NPS EN-1 (Ref 1-17).</p> <p>In the Government report on decarbonising the electricity sector (Business, Energy and Industrial Strategy Committee, 2023 (Ref 1-38)), a total of 70 GW of solar energy capacity is targeted by 2035 (the UK is currently at 16 GW), a proportion of which is intended to be supplied by the Scheme. The BESS within the Scheme and also within the grid enables excess energy generation to be stored and supplied to the grid at non-peak solar production times.</p>
RR-001		Solar has the least impact on electricity price	35. Solar has the least impact on electricity price: solar provides power when demand is typically at its lowest in the UK, and along with the economics of supply and demand, this is when the prices are also typically at their lowest (at these times, already sometimes negative). The claimed economic benefit of solar on energy prices is, at best, therefore marginal.	While solar power frequently generates electricity during periods of low demand and lower prices, its economic and environmental benefits are greatly enhanced when integrated with other technologies such as onshore and offshore wind, and crucially, both short-term and long-term energy storage. BESS plays a pivotal role in stabilising supply and demand by storing excess solar energy produced during low-price periods and releasing it during peak demand, thus helping to alleviate price volatility. This storage capability not only maximises the value of solar generation but also ensures a more reliable and resilient energy grid, reducing reliance on fossil fuels and enhancing energy security, ultimately supporting market stability and driving down overall costs.
RR-001		Intermittent production of solar energy	36. Claiming to be able to power homes with solar and batteries at low cost is misleading: The market value when the bulk of solar energy is produced in the UK, is already when prices are among	While solar energy often generates during periods of low market prices, integrating solar with BESS and other technologies provides substantial benefits. Excess electricity is not necessarily a problem but represents potential that can be utilised through both short-

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>their lowest, and sometimes even negative. That the developer will be paid a strike price which is likely to be significantly higher than these low or negative prices does not represent best value for the customer. This will be the case in particular where intermittent production – such as solar, outstrips the potential for long-duration energy storage (which BESS does not offer), leading to periods of excess renewable energy that is unusable and curtailment.</p>	<p>term and long-term storage solutions, both within the Scheme and on the grid. Addressing these issues effectively requires a grid-level approach rather than solely focusing on individual projects, ensuring that the overall energy system can optimise and manage renewable energy contributions.</p>
RR-001		Lack of community benefit	<p>37. Claims of community benefit are exaggerated: The proposed Tillbridge Solar Project takes power generated at low voltages in parcels of land that surround villages, stepping up the voltage through transformers to connect directly to the National Grid at 400kV, rather than directly to local villages, hence, the developer's claims to be able to "repower the region with clean, green energy" are misleading.</p>	<p>The Applicant disagrees. The Scheme will contribute to providing the region with renewable energy as homes and businesses in Lincolnshire, Nottinghamshire and the wider East Midlands make use of the national electricity system that the Scheme will export to.</p> <p>It is the Applicant's intention to provide a community benefit package as part of the Scheme. The Applicant has engaged with both the Lincolnshire and Nottinghamshire community foundations and, should the Scheme receive development consent, the Applicant would provide a community benefit package. Alongside this, the Applicant is committed to maximising the local economic benefits of the Scheme. The Applicant's proposals to help ensure this are set out in the Framework Skills, Supply Chain and Employment Plan [APP-232].</p> <p>The Scheme will also deliver other more localised local economic, social and environmental benefits. These include ecological enhancements, improvements to soil quality; improvements to the existing Public Rights of Way (PRoW) network through the provision of permissive paths; and significant employment generation during construction. Through careful design, detailed at Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035], the Scheme seeks to avoid and mitigate impacts on the environment and sensitive receptors, whilst ensuring that the Scheme will make a significant contribution to the UK's urgent requirement for the delivery of large amounts of new renewable energy generation capacity and infrastructure.</p>
RR-001		Poor use of strategic national infrastructure	<p>38. Connecting solar directly to 400kV represents a poor use of strategic national infrastructure: using this connection to the National Grid for TSP would sterilise the use of a high voltage substation connection and preclude its use by future high-power applications, with greater flexibility to match demand or with a higher load-factor (such as Small Modular Reactors).</p>	<p>The Applicant considers that the 400kV Cable Route Corridor is the most efficient way of transferring power between the Principal Site and the existing National Grid Cottam Substation. Transferring the power at lower voltages would result in a requirement for additional cable circuits and a greater land take area which could have otherwise been avoided. For example, if the power was transferred using 132kV cables, three additional cable circuits would be required to operate effectively with the required amperage. Distributing the power at a lower voltage would significantly increase the amount of land take required and increase the environmental impact of the Scheme.</p> <p>As discussed in the Statement of Need [APP-210], the Applicant recognises that energy alternatives such small modular reactors have an important role to play in decarbonisation. However, future high-power applications such as small modular reactors are not likely to deliver a sufficient total capacity at the required pace and at an</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001	Connection to National Grid	Connection to National Grid	39. There is no requirement to connect solar direct to the National Grid: Because solar power is generated at low voltages, there are few restrictions to where it can be connected or located. That the developer has cited the connection to the National Grid at the Cottam substation as a starting point for the site location undermines the breadth of alternatives considered as part of the TSP development.	<p>affordable cost to meet the Government's targets. As set out in the Statement of Need [APP-210], due to technological advances, solar facilities are already among the cheapest form of electricity generation in the UK and Government forecasts indicate that costs will continue to reduce in the future. Larger solar schemes, such as the Scheme, deliver power more quickly and at a lower unit cost than other types of energy generation which have not yet been proven at scale, or are not yet being brought forward. The Government recognises in NPS EN-1 (Ref 1-17) that growth in solar capacity, alongside other renewable technologies, is expected to improve the dependability of those assets as a combined portfolio, contributing to an adequate and dependable UK generation mix required to meet the UK's energy security needs, and the decarbonisation needs of the UK. Whilst future high-power applications such as small modular reactors are likely to contribute to decarbonisation, large-scale solar is still an essential part of the future electricity system, that must be deployed where there is the natural resource, where land is available and suitable, and in proximity to available grid connection locations, such as the area local to the Scheme.</p> <p>The Applicant has received a grid connection offer from National Grid as described in item 40. The Scheme is capable of transferring over 500MW of renewable energy to the grid at any one time and therefore a connection directly to the National Grid Cottam Substation is deemed to be the most feasible option. Given the relatively low number of households in the surrounding area, the high-power generation anticipated from the Scheme and the varying electricity suppliers to households in the local area, it is not deemed feasible to transfer power directly from the Scheme to surrounding properties. The most effective way to harness the power generation is by direct connection to the grid.</p> <p>Section 4.5 of Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] sets out the methodology adopted in relation to the site selection process for the Principal Site. The Principal Site for the Scheme was chosen following a five stage process from the determination of an initial search area based upon considerations of irradiance (sunlight) and the identification of relatively low lying and flat topography to maximise energy generation within the east of England. The characteristics of the land in this part of Lincolnshire are optimal for the generation of renewable energy by solar PV, as it has good levels of irradiation and large areas of flat land. From this baseline, a Point of Connection search was then undertaken by the Applicant. The search area was then refined through the application of exclusionary criteria based upon environmental and planning constraints. The availability and suitability of previously developed land was also considered. From this stage, potential development zones were identified as shown in Figure 4-3 of the Environmental Statement [APP-146]. Each of the zones were then evaluated against potential impacts associated with ecology and biodiversity, landscape and visual, land use, cultural heritage, access, field shading, deliverability of grid connection and terrain. This concluded that all zones performed well against the criteria, and would be suitable for the Scheme, albeit with some zones more constrained than others. The least constrained zone (Zone A) was recommended for further consideration as the preferred</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>location for the Scheme. This zone included land to the east and south-east of Gainsborough, which the Principal Site is located within.</p> <p>Zone A as shown in Figure 4-3 of the Environmental Statement [APP-146] contains land in which the Cottam Solar Project is located alongside the Tillbridge Solar Project. Gate Burton Energy Park and the West Burton Solar Project fall within Zone B. As mentioned above, the site selection process confirmed that Zones A and B were suitable for large scale solar projects. However, it was considered that Zone B was relatively more constrained than Zone A in terms of comprising more undulating land and containing more settlements and therefore receptors to be considered as part of the design process. On this basis, Zone A was the preferred zone used to then identify the Principal Site for the Tillbridge Solar Project. It should be noted that the site selection process for the Tillbridge Solar Project commenced in 2020, prior to the other solar projects (Gate Burton Energy Park, Cottam Solar Project and the West Burton Solar Project) being in the public domain. It is demonstrated that through these projects subsequently coming forward that the land falling within both Zones A and B of the Tillbridge site selection report (Figure 4-3) of the Environmental Statement [APP-146] are suitable for large scale solar projects.</p> <p>The ExA in its report to the Secretary of State agreed with the site selection process carried out in relation to the Gate Burton Energy Park, which the Secretary of State agreed with. The ExA confirmed at paragraph 3.2.85 that:</p> <p style="text-align: center;"><i>“Whilst I note the concerns raised in relation to the understanding and interrogation of the site selection process I am satisfied that the methodology and information contained in the Environmental Statement is sufficient to provide for a proportionate and reasonable consideration of the available sites.”</i></p> <p>The ExA, in its recommendation report to the Secretary of State in relation to the Cottam Solar Project considered the site selection process by the Applicant confirming at paragraph 3.2.71 that:</p> <p style="text-align: center;"><i>“Overall, we accept that the Applicant’s approach to site selection has helped to balance the generation of large amounts of low carbon renewable energy against the need to minimise the environmental impacts on its surroundings.”</i></p> <p>The Secretary of State agreed with the ExA’s conclusions with the site for the Cottam Solar Project having been appropriately selected.</p>
RR-001		Connection to National Grid	40. Connection to National Grid: The TSP provisions for an 18km cable corridor to connect to the National Grid. At a time where National Grid are under severe pressure to provide connection capacity to facilitate decarbonisation, in particular to support offshore wind – which will produce the c. 70% of future UK electricity – unlike	The Government has identified through its energy policy, most recently in the NPS EN-1 (Ref 1-17) and NPS EN-3, (Ref 1-18) that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant’s Statement of Need [APP-210] , this includes low carbon energy generation using solar technology, alongside of other forms of low carbon energy

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			solar which is likely to be c. 7%. The TSP therefore serves as an unnecessary distraction to National Grid in meeting its decarbonisation objectives, given that connection of solar at 400kV is unnecessary.	generation, such as wind energy. The Scheme will deliver large amounts of cheap, secure and low-carbon electricity both during and beyond the critical 2020s timeframe. Maximising the capacity of generation in the resource-rich, well-connected and technically deliverable proposed location for the Scheme, represents a significant and economically rational step forwards in the fight against the global climate emergency. The Grid Connection Statement [APP-214] confirms that the Applicant has received a grid connection offer from National Grid Electricity System Operator Limited (NGESO) to connect the Scheme to the NETS. The grid connection offer was provided by NGESO to the Applicant in January 2020. All subsequent modifications have related to the date which the Scheme would connect to the national electricity transmission network. NGET has confirmed that an existing spare bay within the National Grid Cottam Substation is currently available.
RR-001		Inefficient land use	41. Inefficient land use: Given the low solar gain, the TSP constitutes a grossly inefficient use of land – let alone productive arable land and undermines the credibility of the developer to claim that reasonable alternatives have been considered.	<p>NPS EN-3 (Ref 1-18) provides specific design policies for solar development and recognises that there are a number of factors when considering the design and layout of large-scale ground mounted solar PV sites. Paragraph 2.10.17 outlines the requirements of solar farms, highlighting that a solar farm requires between 2 to 4 acres for each MW of output, with a typical 50MW solar farm consisting of around 100,000 to 150,000 panels covering between 125-200 acres. However, this may vary significantly. As set out in the Statement of Need [APP-210], the site selection process for the Scheme included an assumption in favour of a contiguous site to allow the development of a cohesive design, and to derive a site that was sufficient to reflect the power output reflective of the Bilateral Connection Agreement with National Grid. This meant that the site selection process resulted in the Scheme being firmly within the range of expected site size for the expected MW output. As such the Scheme is within the estimated land use requirements for a solar farm set out within NPS EN-3 (Ref 1-18), Paragraph 2.10.17.</p> <p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into account reductions to the Order limits following the Applicant's Change Application submitted in September 2024, for the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is provided within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		Electromagnetic Fields	42. Electromagnetic Fields: The developer, Tillbridge Solar Project, has not made adequate consideration of the impact of Electro Magnetic Fields (EMF) and no attempt has been made to reduce EMF's and their associated impact.	<p>As set out in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. All other infrastructure will be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a Decommissioning Environmental Management Plan (DEMP). In accordance with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)] submitted as part of the Application. The only potential permanent removal of land from agricultural use may result from proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However, the potential change of use of 0.07% of agricultural land that is BMV land to proposed woodland is not considered to be significant, and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60 year operational period has the potential to accrue improvement to soil function over a large area.</p> <p>Section 17.9 of Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048] provides an assessment of the potential impacts associated with Electric and Electro-Magnetic Fields (EMF) on human health. Using National Grid's known levels of electro-magnetic field generation, the assessment considers that, as a worst case scenario, a residential receptor would need to be within 5 m of the centreline of the high voltage cabling associated with the Scheme, and for the cabling to be overlapped by other electricity infrastructure, for potentially significant effects to occur on human receptors. Due to the operational easements required from cabling, no cabling is proposed within 10 m of from the façade of any residential dwelling. This is confirmed in the Outline Design Principles Statement [AS-058], compliance with which is secured by Requirement 5 of the draft DCO [EN010142/APP/3.1(Rev 03)]. Therefore, no significant adverse effects to residential receptors from EMF's are predicted to occur.</p> <p>Section 17.9 of Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048] also states that the presence of the public using PRow either directly above or adjacent to underground cables associated with the Scheme would be transient and it is considered that the level of exposure to users of PRow would be similar to that associated with general household appliances (and noticeably less than associated with the exposure when using certain appliances, e.g. a vacuum cleaner). Therefore, no significant effects to users of PRow are predicted to occur.</p> <p>With regards to EMF impacts on migratory fish, as set out within Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-094] and Appendix 9-12: Habitat Regulations Assessment [EN010142/APP/6.2(Rev 01)], the combination of sealed cabling and a buried depth of at least 5m below the bed of the River Trent is considered sufficient to reduce EMF to levels that are unlikely to be perceivable to fish species transiting along the River Trent and limited to a very small</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		Flood Risk and Soil Erosion	<p>43. Flood Risk and Soil Erosion: The potential for surface run-off and soil erosion from such a vast area of solar panels on this network does not appear to have been properly evaluated, particularly when considered in conjunction with other proposed schemes. The surface water runoff from all 4 schemes drains into the river Till, which already experiences frequent flooding resulting in the loss of thousands of acres of crops, interruption of farming practices due to saturated land and a significant reduction in farming productivity. The storm water runoff from Tillbridge Solar will seriously exacerbate an already existing problem on the flood plain of the River Till. Information available relating to flood management, drainage and soil erosion are therefore inadequate.</p>	<p>area. In addition, most fish species are known to use the entire depth range of the water column and so can also undertake avoidance behaviour via water depth selection. Therefore, it is considered that there will be no significant effects on fish from EMF. Table 3-4 of the Framework OEMP [EN010142/APP/7.9(Rev01)] has been updated at Deadline 1 to confirm that the Applicant will contribute to the monitoring of EMF within the River Trent, as agreed with the other solar developers, subject to an agreement of the feasibility and extent of such monitoring programme within the River Trent with the Environment Agency and Natural England.</p> <p>The Scheme has assessed in detail the drainage and run off impacts of the conversion of the Principal Site from arable farmland to solar panels in Chapter 10: Water Environment of the Environmental Statement [APP-041]. Any impacts are managed via Appendix 10-4: Outline Drainage Strategy of the Environmental Statement [APP-098], which sets out the surface water drainage proposals for the Principal Site and has been prepared in accordance with national and local policies.</p> <p>The assessment concludes that the effect from operational site runoff on the water quality of surface water features and groundwater is not significant.</p> <p>This is on the basis of the measures included within Appendix 10-4: Outline Drainage Strategy of the Environmental Statement [APP-098] to limit erosion and drainage run off. This includes the proposal to plant the area beneath and surrounding the solar panels with native grasslands and wildflower mixes to slow water runoff and mitigate potential erosion. This planting will intercept and absorb rainfall running off the panels, preventing it from concentrating and potentially forming channels in the ground. To prevent ponding occurring around the panels, a series of boundary (and some routing) swales will be constructed to mimic natural drainage conditions. New access roads will be permeable, in accordance with paragraph 2.10.85 of NPS EN-3 (Ref 1-18) By reverting the current arable land to grassland within the Principal Site, bare soil surfaces following cultivation are no longer left each year. The risk of soil erosion and surface runoff (with the attendant problems to water quality from sediment, nutrient, pesticide and faecal indicator organisms) is greatest where there is no planting cover to shield the soil from rainfall. The Scheme will therefore remove this existing source of soil erosion and runoff.</p> <p>It is also noted in respect of the comments on the impacts on the River Till, a portion of the Principal Site drains to the River Eau, via the Yawthorpe Beck to the north of the Principal Site, with only the southern and western extents draining indirectly to the River Till. For all proposed surface water discharge locations, the Appendix 10-4: Outline Drainage Strategy of the Environmental Statement [APP-098] proposes to mimic the existing natural surface water runoff regime, limiting surface water runoff to greenfield rates, and providing attenuation, utilising swales around impermeable areas to capture additional runoff at source, where required, for the 1 in 100 year plus 40% climate change event.</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		Long-term soil quality / BNG	44. Long-term soil quality / BNG: The developer claims there will be a 10% biodiversity net gain from the Tillbridge Solar Project, but have failed to explain how this would be achieved, nor is it clear what methodology or assumptions lie behind the assertion.	<p>A Biodiversity Net Gain (BNG) Report [AS-062] using DEFRA's Statutory Metric, has been produced for the Application. Based on the current design of the Scheme, as set out in the Indicative Landscape Masterplan [AS-028], the Scheme is predicted to result in a net gain of 64.44% for area-based habitat units, 17.28% for hedgerow units, and 22.94% for watercourse units. An updated BNG Report is required to be prepared and approved by the Local Planning Authority prior to construction, which will contain the final details and amount of BNG the Scheme will achieve, in line with the final detailed LEMP, which will be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)]. This is secured by Requirements 7 and 8 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>The Applicant has committed to achieving a minimum level of BNG through the Scheme, as secured by both requirements 7 (landscape and ecological management plan) and 8 (biodiversity net gain) of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev 03)]. Requirement 8 provides that construction cannot commence until a BNG strategy has been submitted and approved by the relevant planning authority, in consultation with the relevant statutory nature conservation body (being Natural England). The BNG strategy must be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev 02)], which states at paragraph 4.6.2 that the Applicant is committed to achieving a minimum of 10% BNG, in accordance with the terms of the Biodiversity Net Gain Report [AS-062]. This approach is consistent with that adopted in the Gate Burton Energy Park Order 2024 [EN010131], which the Secretary of State (agreeing with the Examining Authority) confirmed is an appropriate mechanism for securing BNG (refer to paragraphs 4.13 and 7.4 of the Secretary of State's Decision Letter and paragraph 5.2.14 of the Examining Authority's Recommendation Report).</p> <p>In addition, a Framework Soil Management Plan (SMP) [EN010142/APP/7.12(Rev 01)] has been submitted by the Applicant which sets out how the Applicant intends to preserve the soil resource during construction, operation and decommissioning, avoiding both the loss of soil material from the Scheme and the loss of soil functional capacity for supporting agricultural production. The Applicant will be required to submit a detailed SMP for approval by the relevant planning authority (/authorities) prior to construction, which must be in substantial accordance with the Framework SMP [EN010142/APP/7.12(Rev01)]. This is secured by Requirement 18 of the draft DCO [EN010142/APP/3.1(Rev03)].</p>
RR-001		Greenhouse Gas Assessment	45. Greenhouse Gas Assessment: The assumptions on solar panel life, failure rates, replacement regime and recycling rates are unclear, and therefore undermine confidence in the accuracy and validity of the GHG assessment.	Section 7.3 of Chapter 7 Climate Change of the Environmental Statement [APP-038] details all assumptions used in the calculation of GHG emissions. The GHG impact assessment has assumed that the solar PV panels will need to be replaced once during the 60 year lifetime of the Scheme. This assumption has been factored into the GHG impact assessment. In addition, Table 3-1 in Chapter 3: Scheme Description of the Environmental Statement [AS-053] sets out the indicative design life of other Scheme components which have been considered within the assessment, as set out within paragraph 7.3.24 of Chapter 7 Climate Change of the Environmental Statement [APP-

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001	Role of Batteries	46. Role of Batteries: The developer provides very little detail on the storage facility included in the proposed development. Operating in a separate segment of the electricity market, it is unclear therefore whether the proposed energy storage system can truly be considered to be associated development for the proposed solar farm.	038] . Paragraphs 7.3.14-7.3.17 set out the assumptions made with regards to waste management.	
RR-001	Safety & Environmental risks of batteries	47. Safety & Environmental risks of batteries: The safety and environmental concerns arising from battery development at this scale have not been appropriately considered, including through operation and transportation. Large scale battery installations have begun to be developed in recent years but have been susceptible to failures involving fires and the emission of toxic and flammable fumes. Resulting in environmental damage from toxic run-off.	<p>The management of potential safety and environmental impacts of the BESS proposed for the scheme has been thoroughly assessed and is managed through various controls within the DCO and associated documents. This has been based on learnings from both UK and international installations of BESS, relevant guidance and further assessment and modelling. It is concluded that there will be no significant impacts from a safety or environmental perspective of the BESS installed onsite as set out in Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048].</p> <p>The design principles for the BESS set out within the Outline Design Principles Statement [AS-058] have been based on several factors including baseline environmental conditions and other potential sources of fire hazard in the surrounding area. The distance of BESS to residential areas and commercial properties has also been carefully considered to minimise operational or incident impacts on receptors and there will be no BESS within 250m of residential properties.</p> <p>The Applicant has provided an assessment of the effects of an unplanned fire relating to the proposed BESS. This can be found in Appendix 17-5: Unplanned Atmospheric Emissions from BESS of the Environmental Statement [APP-123]. The assessment demonstrates that in the unlikely event of a fire, after 200m the atmospheric emissions of hydrogen fluoride from the BESS would be below acute exposure guideline levels and therefore, would not result in a significant effect on human health.</p> <p>The detailed design phase of individual BESS sites will consider the lifecycle of the battery system from installation to decommissioning (including transportation). At the detailed design stage, risk assessment tools will be utilised together with detailed consequence modelling to provide a comprehensive site operations and emergency response safety audit.</p> <p>A Framework Battery Safety Management Plan (BSMP) [APP-225] has been prepared with input from the Lincolnshire Fire and Rescue Services alongside this</p>	

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		Glint and Glare	48. Glint / Glare: The impact of glint and glare on aviation (e.g. RAF, airfields, gliding clubs), or other outdoor activities (e.g. horse riding, hunts) has not been thoroughly considered, as well as the risk of reflected glare from the panels affecting prominent roads.	<p>Application which provides mitigation and management measures for thermal runaway safety risks posed by the BESS in the Scheme.</p> <p>At the time of installation, the Applicant will work closely with the Fire and Rescue Service to provide all relevant information on BESS and site design features to inform all necessary hazard and risk analysis studies and assist in the development of comprehensive Risk Management (RM) and Emergency Response Plans (ERP). This will include embedded design features to manage emergency scenarios such as fires should they arise, including dedicated fire water storage tanks and/or hydrants.</p> <p>Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048] and supporting Appendix 17-2: Glint and Glare Assessment of the Environmental Statement [APP-120] provides an assessment of glint and glare effects of the Scheme. In accordance with NPS EN-3 (Ref 1-18), the assessment considers effects upon surrounding road users, railway operations, dwellings, PRoW, bridleways and aviation activity, based on the visibility of PV panels from receptors, their angles using geometric calculations, and amount of sunlight. The assessment notes that the Scheme's design, which includes careful siting in the landscape, conserving existing vegetation patterns and creating new green infrastructure through planting, will mean that it is unlikely that adverse effects will be experienced from glint and glare. The glint and glare assessment concludes that there will be no impacts on bridleways, residential receptors or road receptors, and low (not significant) impacts on aviation receptors on Runway 27 at Sturgate Airfield.</p>
RR-001		Noise impacts	49. Noise: It is unclear from the information provided by the developer what noise pollution will arise from the proposed Tillbridge Solar Development, either from electrical equipment (e.g. battery and inverter fans), which can be particularly noisy, or from wind noise / resonance from the configuration of large panel structures.	<p>Chapter 13: Noise and Vibration of the Environmental Statement [AS-006] provides an assessment of noise and vibration effects on local receptors and identifies measures which have been incorporated within the Application to minimise these effects. During construction the primary sources of noise will be construction plant and construction traffic. A detailed list of these sources of noise is provided in Appendix 13-4 of the Environmental Statement [AS-008]. The Framework CEMP [EN010142/APP/7.8(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] incorporate best practicable means set out in BS 5228-1 and BS 5228-2 (Ref 1-39 and Ref 1-40) to control noise and vibration respectively during the construction and decommissioning phases. In addition, construction traffic on the highway network will be managed through the Framework CTMP [EN010142/APP/7.11(Rev02)]. Where necessary, the Applicant will submit an application for prior consent to carry out noisy work under Section 61 of the Control of Pollution Act 1974 (Ref 1-41) to demonstrate that noise and vibration has been minimised as far as reasonably practicable. With these measures in place, no significant effects from the construction and decommissioning phases are considered likely.</p> <p>During operation, the primary sources of noise are expected to come from the BESS, inverter fans, shunt reactors and transformers. No noticeable increase in wind noise is anticipated from the operation of the plant. Noise from permanent plant will be controlled through the measures set out within the Framework OEMP [EN010142/APP/7.9(Rev01)]. In addition, the Scheme layout has been optimised to</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-001		Decommissioning Arrangements	<p>50. Decommissioning Arrangements, Through-life Maintenance Replacement of Panels & Recycling: The Tillbridge Solar Project documentation provides little detail on the assumptions for the operational lifetime of solar panels or the arrangements for replacing and recycling millions of panels, perhaps twice through the lifetime of the project. Similarly, there are few details on arrangements for decommissioning and recycling, nor the standards to which the developer would be held to at the end of the life of the project. Given that the developer does not have experience of development at this scale, there is no guarantee the region is not left with the legacy of a disused industrial solar installation liability occupying a huge area at the end of the project's lifetime.</p>	<p>locate inverters as far as practically possible from sensitive receptors where the highest levels of noise were predicted. The Outline Design Principles Statement [AS-058] sets out the commitment to locate Solar and BESS Stations at least 250m from residential properties. With these measures in place, the modelling of the noise from the above plant has indicated that there would be no significant noise effects from the operational phase.</p> <p>A description of the operational phase and decommissioning phase activities, including the indicative design life of the Scheme components, is provided in Chapter 3: Scheme Description of the Environmental Statement [AS-053]. Operational waste effects are assessed in Chapter 17 Other Environmental Topics [APP-048].</p> <p>The removal of solar infrastructure at the end of the Scheme's operational life is secured. The Framework DEMP [EN010142/APP/7.10(Rev01)] requires the removal of all solar PV array infrastructure including modules, mounting structures, cabling inverters and transformers and concrete foundations. The detailed DEMP must be substantially in accordance with the Framework DEMP, per Requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], and non-compliance with a DCO requirement would be a criminal offence.</p> <p>As set out in the Framework OEMP [EN010142/APP/7.9(Rev01)] for replacements during the operational phase and Framework DEMP [EN010142/APP/7.10(Rev01)] during the decommissioning phase, the Applicant is committed to maximise recycling and reuse of the Scheme components at the end of their life. There are already organisations around the UK and Europe specialising in solar recycling, such as PV Cycle and the European Recycling Platform. They are working with solar developers to minimise electrical waste and recycling old panels in line with the Waste Electrical and Electronic Equipment (WEEE) Regulations (Ref 1-8). In addition, companies like SECONDSOL offer a marketplace service for the purchase and selling of second-hand PV panels and equipment, where there is still a good level of life in the equipment remaining. Panels that have developed faults or damage can also be refurbished and repowered by specialist companies and manufacturers and resold or reinstalled. The Applicant will adhere with the industry best practice outlined in Solar Power Europe's Lifecycle Quality Best Practice Guidance (Ref 1-42).</p> <p>The Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] have been updated at Deadline 1 to confirm that the Applicant will implement the waste hierarchy and commit to diverting a minimum of 70% of the waste from landfill.</p>
RR-001		Financial Due Diligence	<p>51. Financial Due Diligence: It is evident from Financial Returns that neither Tillbridge Solar Project Limited does not have direct capital to support the estimated £500+ Million pounds to develop the project or deal with the decommissioning of the Tillbridge Solar Project. It is widely expected therefore that if approved the Project will be sold or further investment found. It will be important that the</p>	<p>The Applicant disagrees. Tillbridge Solar Limited is a joint venture between two established companies: Recurrent Energy (a Canadian Solar company) and Tribus Clean Energy. The Applicant has the means to acquire the required rights and build the Scheme as set out in Section 2.3 of the Funding Statement [APP-018].</p>

RR Ref. No.	IP Name	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>decommissioning is secured and be completed with the land being returned to its previous state. With this in mind it is strongly recommended that if the application is approved, it is made explicit within the DCO that this should be conditional on the incumbent landowners ultimately being made responsible for the identified decommissioning as a backstop against unforeseen circumstances, e.g. financial default by the developer or its successor companies. Similarly, the ethical and sustainable stewardship of the asset should be safeguarded – unlike the recent example of Thames Water, where one of their lead shareholders is now involved in green finance of solar schemes.</p>	<p>The Applicant is committed to ensuring that the Scheme is decommissioned at the end of its operating life. Decommissioning of the Scheme is a requirement included in the draft DCO [EN010142/APP/3.1(Rev03)]. This requires that the decommissioning be carried out in accordance with a Decommissioning Environmental Management Plan. A framework version of this document has been submitted with the Application – the Framework DEMP [EN010142/APP/7.10(Rev01)]. This requirement will be enforceable against anyone who holds the benefit of the Order at the time that the Scheme is decommissioned and failure to comply with the requirement would be a criminal offence.</p>
RR-001		Sustainability and ethics in sourcing of materials	<p>52. Sustainability and ethics in sourcing of materials: The U.S. government has identified forced labour in China as an area of concern for the solar supply chain. Furthermore, the process of extracting the raw materials for batteries requires large amounts of energy and water, often in mines where workers face unsafe conditions. Any materials sourced by the developer for the Tillbridge Solar Project should be truly sustainable, e.g. free of forced labour, where workers' safety is paramount, and where the full environmental implications are understood.</p>	<p>At this stage the final choice of panels is not known and a supplier has not been identified. However, the Applicant recognises that there are risks of modern slavery being connected to UK businesses and supply chains and will comply with all legal obligations regarding modern slavery.</p> <p>Regarding this, the Framework Skills, Supply Chain and Employment Plan (SSCEP) [APP-232] sets out that the procurement strategy for the Scheme must be shaped to maximise opportunities to local businesses, with an ethical procurement policy, whilst seeking to minimise associated environmental impacts and safeguarding human rights in the supply chain. The final SSCEP must be substantially in accordance with the Framework SSCEP and is required to be submitted to and approved by the relevant planning authority (/authorities) before construction can commence on the Scheme. This is secured in Requirement 19 of the draft DCO [EN010142/APP/3.1(Rev03)].</p>
RR-164		Impacts to time trialling course	<p>It is important that the proposed project takes into account traditional sporting activities and meets its commercial objectives. Time trialling has been a part of England's sporting heritage since Victorian times and a source of National pride with Olympic successes. The current project directly impacts the last available 'real' time trialling course in the area and a consultation to enable the continuation of racing on summer evenings would be much appreciated by the local community. Only last week we had a young rider deliver a performance which would suggest an international career beckons. I would appreciate the opportunity to discuss how our mutual objectives can be met.</p>	<p>As referenced in the Framework CTMP [EN010142/APP/7.11(Rev02)], any partial or full road closures that may affect time trial courses are expected to be for a short duration to minimise impacts on the local highway network. It is noted that the local time trialling course follows the B1398 Middle Street north to the roundabout of A631 Harpswell Lane and B1398 Middle Street, and then runs back south along B1398 Middle Street. Potential full or partial road closures are summarised in Table 7-1 of the Framework CTMP [EN010142/APP/7.11(Rev02)], and the Traffic Regulation Measures Plans [EN010142/APP/2.5(Rev03)] outline areas where the Applicant anticipates that a banks person or traffic signal control may be required. B1398 Middle Street is expected to require partial closure for 4-5 weeks and the roundabout is expected to require partial closure for 1-2 days. Advance warning, in the form of statutory notices issued by the highway authority, where the highway authority advertises the closure in the local press, and notification by the Contractor by letter to residents in proximity to the closure will be provided in line with local highway authority guidance for partial or full closures. The cycling club should also notify the Community Liaison Officer ahead of time trials happening so that any traffic management can be scheduled around it as far as possible.</p>

2.5 Persons with an Interest in the Land (PIL)

Table 2-5. Applicant's Responses to Relevant Representations – PIL

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-214 and RR-091	Nicholas Hill and Emma Ruth Hill	Freehold and Occupier	Impact on agricultural holding and business	Nicholas Hill owner of Hill agriculture. Hill agriculture purchased land at Marton and gained planning permission for a new farm yard and buildings for our first generation agricultural business. We totally object. Tillbridge, Gate Burton, [Cottam] and west Burton proposed cable routes go directly Straight through our new farm yard this will have a devastating impact on our first generation farming business and may put us out of business as we will simply not be able to develop our farm	<p>The Applicant acknowledges that Nicholas Hill gained full planning permission in 2023, as set out in paragraphs 3.7.10 to 3.7.11 of the Planning Statement [AS-029] which specifically refers to the agricultural barns granted full planning permission. Section 3.7 of the Planning Statement [AS-029] considers the implications of overlapping proposals and consents within the Order limits and the interrelationship between these projects and the Scheme.</p> <p>The iteration of the Order limits through the design process has sought to ensure that the Scheme can be implemented without impacting upon the implementation of the approved planning permission in combination with the other NSIPs (Gate Burton Energy Park, the Cottam Solar Project and the West Burton Solar Project), whose Order limits also overlap at this location.</p> <p>Whilst all solar NSIP schemes have sought to deliver a shared Cable Route Corridor as far as practicable to minimise environmental impacts, there is a need to retain some flexibility to ensure that one project does not prevent another project coming forward should all DCOs be made and to have regard to the extant planning permission for the agricultural barns in this location (LPA Ref no. 145882).</p> <p>The Order limits as shown on the Works Plans [EN010142/APP/2.3(Rev02)] and the Outline Design Principles Statement [AS-058] set out the parameters within which the detailed design will come forward. In some cases, this includes flexibility and limits of deviation for some components and other components are fixed. The development consent seeks flexibility with respect to the layout of cables within the limit of deviation provided by the width of the Cable Route Corridor to ensure that the micro siting of cables can minimise environmental impacts and have regard to overlapping consents.</p> <p>Generally, the Cable Route Corridor is approximately 100m wide, this being of sufficient width in unconstrained locations to allow the laying of four sets of cables associated with all of the solar NSIPs. Table 3-4 of Chapter 3: Scheme Description of the Environmental Statement [AS-053] explains where a greater width is required. This includes location 29 (the land referred to by the interested party in RR-214).</p> <p>The Outline Design Principles Statement [AS-058] (at page 8 to 10) sets out the design parameters for the Cable Route Corridor, which the detailed design must accord with per Requirement 5 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. The Statement confirms the need for a construction width of up to 40m wide for the Cable Route Corridor. This actual</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
					<p>working width would sit within the 100m flexibility provided by the Cable Route Corridor as shown on the Works Plans [EN010142/APP/2.3(Rev02)].</p> <p>Chapter 3: Scheme Description of the Environmental Statement [AS-053] includes some indicative and typical/general arrangement drawings of some of the Cable Route Corridor components which support the width sought (Figure 3-11: Indicative Cable Route Corridor Trenched and Trenchless Crossing Locations [AP-140], Figure 3-12: Typical Trenchless Crossings [EN010142/APP/6.3(Rev01)] and Figure 3-13: Typical 400kV jointing bay [APP-142]).</p> <p>In the case of land owned by Nicholas Hill, the Application seeks an area of optionality within the Cable Route Corridor that provides two alternative routes, one to the north of the approved barns and one to the south. This is due to concerns associated with space for all four schemes (Gate Burton Energy Project, Cottan Solar Project, West Burton Solar Project and this Scheme) with a single option and concern associated with land acquisition rights that emerged through the Gate Burton Energy Park examination.</p> <p>The Joint Report on Interrelationships between Nationally Significant Infrastructure Projects [APP-215 to 217] sets out the interrelationships between the Gate Burton Energy Park, Cottam Solar Project, West Burton Solar Project and the Tillbridge Solar Project to support each of the Applications and to explain how each of the developers has collaborated to design a shared Cable Route Corridor between all of the projects. Appendix A of the Joint Report on Interrelationships Report [APP-215 to 217] includes a summary of discussions undertaken between each of the Applicants and Appendix C includes a copy of a Cooperation Agreement signed by each of the developers. The Cooperation Agreement includes Clause 4.1.1. states that the parties must cooperate with each other and act reasonable and in good faith including specifically to mitigate adverse impacts on persons with an interest in the land affected by the four projects.</p> <p>The collaboration referred to above has included discussions between each Applicant in relation to the design principles associated with the trenchless crossing arrangements under the A156 High Street. The crossing proposals at this point will partially cross land under the ownership of Nicholas Hill and subject to the extant planning permission for the erection of the agricultural barns (LPA Ref 145882). During the coordination discussions referred to above, the developers sought to ensure that each of their respective Order limits would not prejudice the implementation of the approved planning permission for the agricultural barns and to also allow sufficient space for the cables associated with the four NSIP schemes to be located either north or south of the proposed barns.</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-221	Nimesh Dhokia	Subsoil interest up to half width of highway	Size of the Scheme	<p>Dear Panel Although I have no objection to solar paneling and the use of flat farmland to create an energy supply. What I do have a major problem with is the sheer size of the solar farms when considered all together. For you as planners, I understand that each case must be met in individual merits but for me, who lives here, every inch of land for tens of miles has now disappeared and I will live in a valley of black tiles and high fences. This is simply unacceptable and unfair. You need to start considering the impact on our mental health, especially the elderly who move to the countryside for respite in our final years and who you are now dooming to a life in a sea of blackness for miles around. Unfair, unfair, unfair</p>	<p>This work described above confirmed that the Order limits for the Scheme are sufficient to provide four trenchless crossings under the A156 High Street avoiding conflicts with the proposed agricultural barns and allowing sufficient space to the north and south of the proposed barns for the laying of cables.</p> <p>The proposed Tillbridge crossing location can be found on Figure 3-11: Indicative Cable Route Corridor Trenched and Trenchless Crossing Locations [APP-140].</p> <p>The Applicant recognises that the potential for future landscape and visual changes (and associated potential impacts on amenity or health of local communities) associated with the Scheme during construction, operation and decommissioning may be a source of concern for some local residents. The Applicant acknowledges that the Secretary of State will need to balance those impacts and changes against the urgent need and critical national priority for the Scheme as set out in Government policy. Although the Applicant acknowledges that there will be some adverse impacts arising from the Scheme, with regard to landscape and visual and associated impacts to health and mental wellbeing, the Applicant has sought to avoid, mitigate and minimise these impacts as much as possible, and has prepared a number of management plans that will ensure that impacts are kept to a minimum. Overall, the Applicant's position is that in terms of the overall planning balance, the clear and substantial benefits of the Scheme outweigh any adverse effects, which would be localised, short-term, temporary and/or reversible at the end of the Scheme's lifetime.</p> <p>The Applicant acknowledges that the operation of the Scheme, in isolation, will result in a residual significant adverse effect upon Local Landscape Character LLCA 3A Till Vale and a small number of visual receptors, as presented in Chapter 12: Landscape and Visual Amenity Assessment of the Environmental Statement [APP-043]. However, the Applicant has carefully designed the Scheme in consultation with stakeholders to ensure landscape and visual impacts are minimised as far as practicable by proposing a comprehensive landscape and ecological design which increases connectivity and local access through the landscape, with the inclusion of buffers from sensitive features and properties and the creation of new green infrastructure to provide screening and enhance the landscape condition as discussed in the Design and Access Statement [AS-031] and in the Framework Landscape and Ecological Management Plan [EN010142/APP/7.17(Rev02)]. This design is illustrated on the Indicative Landscape Masterplan [AS-064].</p> <p>Chapter 11: Human Health of the Environmental Statement [APP-042] assesses potential effects of the Scheme on health and wellbeing of local residents. The assessment takes a holistic approach to health and considers a wide range of health determinants which are relevant to quality of life and amenity. The assessment considers elements of the Scheme which could affect</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
					<p>mental health (for example changes in landscape and visual amenity, noise, access to open space and employment) as well as physical health (for example associated with air pollution). The Applicant acknowledges that there will also be minor adverse effect on human health, with respect to mental health, from changes to views, landscape and neighbourhood amenity during the construction phase, however this is not considered to be significant. There will also be no adverse significant impacts on access to services or facilities, community connectivity, impacts on active travel, air quality or noise. A beneficial effect of employment during construction is concluded, through the provision of 183 jobs to the local area, with a Gross Value Added of £7.9 million within West Lindsey and Bassetlaw districts. The Scheme will also provide two new permissive paths providing recreational access in an area where public rights of way are limited and also improving north-south off-road links. The paths will be located within 25m wide corridors that will allow sufficient space for planting such as hedgerows to screen solar infrastructure and offer biodiversity and visual interest to users.</p> <p>The assessment of cumulative impacts of the Scheme with other existing and proposed energy developments as well as other developments in the locality is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049].</p> <p>The Scheme and other solar DCOs have worked collaboratively during design development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures. Consideration has also been given as to how habitat creations link with other proposed developments and more widely across the landscape.</p> <p>Significant cumulative effects have been identified on three landscape character areas and eight representative views during construction and decommissioning, however these are temporary and short term, for the duration of the construction period.</p> <p>The Scheme would result in significant cumulative effects on Local Landscape Character Area 3A Till Vale at year 15 of operation, and two significant visual effects at Viewpoint 7 on the B1398 Middle Street, Glentworth Cliff Farm and Viewpoint 13 at public footpath (Hems/787/2) on Lincoln Cliff, Hemswell at year 15 of operation. All other cumulative effects have been assessed as not significant. Cumulative landscape and visual impacts will be managed in accordance with the relevant environmental management plans, including the Framework LEMP [EN010142/APP/7.17(Rev02)].</p> <p>Further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is provided in the Joint Report on the</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
					<p>Interrelationship with other National Infrastructure projects [APP-215 to APP-217].</p> <p>The Planning Statement [AS-029] acknowledges at paragraph 7.4.34 that significant landscape and visual cumulative effects remain when the Scheme is considered in combination with the other solar NSIPs. However, it concludes that this should only be afforded moderate negative weight in the planning balance given the critical national priority to deliver solar infrastructure, the time limited nature of the Scheme, the localised visual impacts and impact relating to a local rather than national landscape designation.</p> <p>Whilst each development consent will be considered on its merits, it is also noted that the recent approval of development consent for the Gate Burton Energy Park and the Cottam Solar Project are important and relevant considerations in applying the planning balance for this Scheme. These decisions agree with the conclusion presented in the Application that there are cumulative effects that attach negative weight. However, the decisions for the made development consents agree that despite this negative weight, the benefits of all three solar projects are not outweighed by their adverse impacts confirming that development consent should be granted in both cases.</p> <p>With respect to the Gate Burton Energy Park, the Secretary of State at paragraph 4.89 of his Decision Letter agreed with that the methodology used to consider cumulative effects taking into account the worst-case scenario and that there are two significant cumulative effects identified on landscape and visual receptors. At paragraph 3.14.20 of the Gate Burton Energy Project ExA's report, it was concluded that:</p> <p><i>“Overall and I am satisfied that the combination of both effect interactions and cumulative effects between the short list of schemes in the locality have been taken into account in reaching my conclusions. The Applicant has sought to introduce collaboration with the developers of the other solar NSIP schemes, not least through the shared [Grid Connection Corridor] which also facilitates shared communication and consultation potential and has sought to embed the potential for further collaboration in the fCTMP. Whilst there may be some effect interactions that would occur, for example, landscape and visual amenity and noise and vibration, I am satisfied that there are no significant effects from effect interactions between differing effects on receptors, such that would increase the intensity and magnitude of effect. I agree with the Applicant's conclusions of the assessment of cumulative effects where two significant cumulative effects are identified on landscape and visual receptors.”</i></p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
					<p>In applying the planning balance, the Gate Burton Energy Project ExA at paragraph 5.3.13 concludes that <i>“none of the matters which I have weighed against the Order being made, either in isolation or in combination, outweigh the significant benefits that I have identified.”</i></p> <p>The Cottam Solar Project Environmental Statement Chapter 23 identified significant cumulative effects after embedded mitigation and mitigation measures have been applied with the Cottam Solar Project ExA concluding on cumulative matters at paragraphs 3.13.30 of the recommendation report that:</p> <p><i>“We are satisfied that the Applicant has adequately assessed the likely significant effects of the Proposed Development cumulatively with other planned development and that the Environmental Statement includes sufficient information on how the effects of the proposal would combine and interact with the effects of other development during construction, operation and decommissioning. Accordingly, we are satisfied that the requirements of the EIA Regulations, 2011 NPS EN-1 and 2024 NPS EN-1 are met.”</i></p> <p>The Secretary of State confirmed at paragraph 7.3 of the Cottam Solar Project DCO Decision Letter that he agreed with the Cottam Solar Project ExA’s conclusions in respect of cumulative effects and that despite these impacts that the benefits of the Cottam Solar Project outweigh its adverse impacts. The SoS goes on to state at paragraph 7.6 of his decision that:</p> <p><i>“The Secretary of State does not believe that the national need for the Proposed Development as set out in the relevant NPSs is outweighed by the Development’s potential adverse impacts,”</i></p> <p>The Tillbridge Solar Project application is also supported by an Equality Impact Assessment (EqIA) [APP-227]. This assesses the potential direct and indirect impacts of the Scheme on groups with protected characteristics as defined by the Equality Act 2010. It acknowledges that during construction increased traffic movements has the potential to disproportionately affect some protected characteristic groups, including older and disabled people. It is recognised that noise, vibration, and air qualities could also affect these groups. During operation of the Scheme, potential impacts include negative effects of increased noise on protected characteristic groups such as disabled people. The EqIA assesses how the Scheme may therefore impact on the health and well-being of protected characteristic groups.</p> <p>The implementation of Construction, Operation, and Decommissioning Environmental Management Plans (CEMP, OEMP, and DEMP respectively) containing mitigation measures provide a clear and consistent approach to controlling Scheme activities, and therefore will support reduction of potential</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-139 and RR-276 respectively	John Rapley and Shelley Rapley	Subsoil interest up to half width of highway	Scale of the Scheme and environmental impacts	The tilbridge application will have a significant impact on me directly as it will almost surround my house. If this industrial scale solar installation was to be given permission then I would be able to see a sea of glass from my house to the full extent of the currently magnificent views I have which extends to Lincoln Cathedral so 15 miles away My wife and I moved to this house just over a year ago and we bought it for its amazing views and lifestyle it offers.	<p>negative equality effects as concluded in the EqIA [APP-227]. A Framework CEMP [EN010142/APP/7.8(Rev01)], Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] have been submitted alongside the DCO Application. Continued and sensitive engagement with affected individuals with protected characteristics will continue through the examination, detailed design, pre-construction, construction, operation and decommissioning stages. This will be secured through requirement 4 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] which requires the establishment of a community liaison group prior to the commencement of development. This will provide a forum in which to manage impacts upon the local community including those with protected characteristics.</p> <p>The Applicant recognises that the potential for future landscape and visual changes (and associated potential impacts on amenity or health of local communities) associated with the Scheme during construction, operation and decommissioning may be a source of concern for local residents. The Applicant has set out its responses to comments from RR-139 and RR-276 below, split out over multiple rows to address each point.</p> <p><u>Landscape and Visual</u></p> <p>The Applicant was aware of the potential impacts of the Scheme on properties along Kexby Road at the early stages of the Application. Consequently, efforts were made to engage with residents throughout the Application stage to better understand how mitigation could limit these impacts. As a result, solar development was removed from the field to the east of the property (adjacent to the junction of Kexby Road and Northlands Road) and a belt of new woodland proposed north of Glentworth Grange and Grange Cottages. The Applicant appreciates the value of the open views to residents and that balancing the screening of panels with the loss of such open views can be a challenge. For this reason, the woodland has been set back from the properties beyond a 'Biodiversity Zone' that will include native and species-rich grassland. The intention of this set-back is to retain a degree of openness that would otherwise not occur if the woodland were to abut the rear boundary of the properties. The Applicant acknowledges that there will be a change in the character of the view in this direction, which corresponds to the significant visual effect identified for Representative Viewpoint 9 (located west of Glentworth Grange) as presented in section 12.8 of Chapter 12: Landscape and Visual Amenity Assessment of the Environmental Statement [APP-043]. However, as noted in Appendix 12-6: Assessment of Visual Effects of the Environmental Assessment [APP-043], much of this change will arise through the introduction of vegetation and a more limited outlook in comparison with the baseline, but one that would not be out of character with the wider area whilst offering diversity and visual interest.</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
					<p>Solar development within the Scheme is only located to the north of properties on Kexby Road. The Scheme includes areas to the south of Kexby Road, but these are proposed only as a 'Biodiversity Zone': no solar infrastructure will be present. As noted above, this Biodiversity Zone will include a range of habitat: predominantly native grassland with new and enhanced hedgerows, tree belts, wetlands and species-rich meadows. This development-free zone is intended to provide a buffer to the Cottam Solar Project (which is located approximately 500 m to the south of Kexby Road), as well as avoid any sense that panels and other solar infrastructure related to the Tillbridge Scheme will 'surround' properties at this location. It is intended that the 500m buffer will retain open views to the south towards Lincoln Cathedral, with a woodland belt or a hedgerow managed to an appropriate height along the southern boundary of the Order limits providing screening to panels within the Cottam Solar Project beyond.</p> <p>With respect to the above, buffers from residential properties are discussed in the Design and Access Statement [AS-031] and in the Framework Landscape and Ecological Management Plan (LEMP) [EN010142/APP/7.17(Rev02)]. This design is illustrated on the Indicative Landscape Masterplan [AS-064] and will be secured through the Works Plans [EN010142/APP/2.3(Rev02)] as certified plans under Schedule 13 of Article 41 of the draft DCO [EN010142/APP/3.1(Rev03)] and the LEMP to be secured by requirement 14 of the draft DCO [EN010142/APP/3.1(Rev03)], which will need to be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)].</p>
RR-139 and RR-276 respectively	John Rapley and Shelley Rapley	Subsoil interest up to half width of highway	Scale of the Scheme and environmental impacts	Our garden and the surrounding fields have an abundance of wildlife, including barn owls, newts, hedgehogs, deer, muntjac, red kites, finches, wood peckers, hares and so much more that will lose their habitat should this development go ahead. This devastation will not be short lived either but will impact the wildlife for the full extent of the proposed timespan of the installation and beyond. Populations of animals will be displaced or killed all for the profit of Tillbridge Solar and it's parent companies.	<p><u>Ecology</u></p> <p>The Applicant has undertaken detailed ecological surveys to understand the habitats and species present. Full details of these surveys are provided in Table 9-11 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with further details set out in Appendices 9-1 to 9-12 of the Environmental Statement [APP-081 to APP-094].</p> <p>A detailed assessment of the potential impacts of the Scheme on biodiversity is presented in section 9.9 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with particular reference to Tables 9-14 and 9-15. The Applicant has carefully designed the Scheme to avoid or minimise adverse effects to biodiversity, with substantial measures embedded and detailed in Table 9-13 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040].</p> <p>The assessment in section 9.9 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040] concludes that there will be no significant adverse effects on biodiversity, with significant beneficial effects to a variety of habitats, including broad-leaved woodland,</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-139 and RR-276 respectively	John Rapley and Shelley Rapley	Subsoil interest up to half width of highway	Scale of the Scheme and environmental impacts	I also have great concerns about the safety of the battery storage, I have seen batteries first hand catch fire and spew toxic smoke out also and take an age for the fires to be put out, this has no place being anywhere near a residential area or indeed near wildlife.	<p>running water, hedgerows and species, including breeding birds, particularly farmland birds associated with hedgerows and field margins.</p> <p>Although it is not mandatory for NSIPs until 2025, the Scheme will deliver a minimum 10% gain for biodiversity secured by both requirements 7 (landscape and ecological management plan) and 8 (biodiversity net gain) of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. Requirement 8 provides that construction cannot commence until a BNG strategy has been submitted and approved by the relevant planning authority, in consultation with the relevant statutory nature conservation body (being Natural England). The BNG strategy must be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)], which states at paragraph 4.6.2 that the Applicant is committed to achieving a minimum of 10% BNG, in accordance with the terms of the Biodiversity Net Gain Report [AS-062].</p> <p>Battery Safety</p> <p>The Applicant has sought to address concerns raised about BESS through significant embedded mitigation incorporated in the design, siting and management of the BESS in the Scheme.</p> <p>The selection of the location for BESS (refer to Figure 3-1: Indicative Principal Site Layout Plan of the Environmental Statement [AS-055]) has been based on several factors including wider environmental conditions and other potential sources of fire hazard in the surrounding area. The distance of BESS to residential areas and commercial properties have also been carefully considered to minimise operational or incident impacts on receptors and there will be no BESS within 250m of residential properties.</p> <p>The detailed design phase of individual BESS sites will consider the lifecycle of the battery system from installation to decommissioning. At the detailed design stage, risk assessment tools will be utilised together with detailed consequence modelling to provide a comprehensive site operations and emergency response safety audit.</p> <p>A Framework Battery Safety Management Plan (BSMP) [APP-225] has been prepared with input from local Fire and Rescue Services which provides mitigation and management measures for fire safety risks posed by the BESS in the Scheme.</p> <p>The Applicant will update the Framework BSMP [APP-225] during the Examination to reflect the latest National Fire Chief Council's guidance and has amended design parameters within the Outline Design Principles Statement [AS-058]. This will ensure that the Scheme incorporates latest guidance delivering an optimum design solution with respect to fire safety.</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-139 and RR-276 respectively	John Rapley and Shelley Rapley	Subsoil interest up to half width of highway	Scale of the Scheme and environmental impacts	This industrial development will irrevocably alter the entire landscape as we know it due to its completely disproportionate size alone. Also one should consider this and in conjunction with the other proposed industrial solar installations for this area should they be approved. This irrevocably change this beautiful landscape and will be seen for miles from middle street.	<p>The Requirement 5 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] will ensure that the Outline Design Principles are secured during implementation. In addition, requirement 6 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] requires the submission and approval the BSMP by the relevant planning authority. The BSMP must be substantially in accordance with the Framework BSMP [APP-225] and the BSMP implemented as approved.</p> <p>The Applicant would also highlight the comment from Lincolnshire County Council in its relevant representation, which acknowledges that “<i>The Framework Battery Safety Management Plan appears to capture all of the details discussed during the engagement meetings</i>” and reflects current guidance.</p> <p>The Applicant has also agreed to a programme for monitoring and assessment of the Scheme once constructed to ensure the Lincolnshire Fire and Rescue Service is satisfied the Battery Safety Management Plan has been properly implemented, as requested by this representation, within the protective provisions at Part 8 of Schedule 15 of the draft DCO [EN010142/APP/3.1(Rev03)]. This includes commitments to provide a financial contribution to the Fire and Rescue Service so that it can undertake this monitoring and assessment, at clause 94 of those protective provisions.</p> <p><u>Cumulative Impact</u></p> <p>The assessment of cumulative impacts of the Scheme with other existing and proposed energy developments as well as other developments in the locality is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049].</p> <p>The Scheme and other solar DCOs have worked collaboratively during design development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures.</p> <p>Significant cumulative effects have been identified on three landscape character areas and eight representative views during construction and decommissioning however these are temporary and short term, for the duration of the construction period. A temporary significant beneficial effect from the generation of construction employment at a local scale was also identified.</p> <p>The Scheme would result in significant cumulative effects on Local Landscape Character Area 3A Till Vale at year 15 of operation, and two significant visual effects at Viewpoint 7 on the B1398 Middle Street, Glentworth Cliff Farm and Viewpoint 13 at public footpath (Hems/787/2) on Lincoln Cliff, Hemswell at year 15 of operation. All other cumulative effects have been assessed as not</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
					<p>significant. Cumulative landscape and visual impacts will be managed in accordance with the relevant environmental management plans, including the Framework LEMP [EN010142/APP/7.17(Rev02)].</p> <p>Further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is provided in the Joint Report on the Interrelationship with other National Infrastructure projects [APP-215 to APP-217].</p> <p>The Planning Statement [AS-029] acknowledges at paragraph 7.4.34 that significant landscape and visual cumulative effects remain when the Scheme is considered in combination with the other solar NSIPs. However, concludes that this should only be afforded moderate negative weight in the planning balance given the critical national priority to deliver solar infrastructure, the time limited nature of the Scheme, the localised visual impacts and impact relating to a local rather than national landscape designation.</p> <p>Each development consent order is considered on its own merits by the relevant ExA for that project, who makes a recommendation to the SoS on whether development consent should be granted or refused. However, the outcomes of other Development Consent Orders are important and relevant considerations in applying the planning balance for this Scheme. It is therefore important to note that development consent has been granted for the Gate Burton Energy Park and the Cottam Solar Project. These decisions agree with the conclusion presented in the Application that there are cumulative effects that attach negative weight. However, the decisions for the made development consents agree that despite this negative weight, the benefits of the three solar schemes are not outweighed by their adverse impacts confirming that development consent should be granted in both cases.</p> <p>With respect to the Gate Burton Energy Park, the SoS at paragraph 4.89 of the Gate Burton Energy Park Decision Letter agreed with that the methodology used to consider cumulative effects taking into account the worst-case scenario and that there are two significant cumulative effects identified on landscape and visual receptors. At paragraph 3.14.20 of the Gate Burton Energy Park ExA's report, it was concluded that:</p> <p><i>“Overall and I am satisfied that the combination of both effect interactions and cumulative effects between the short list of schemes in the locality have been taken into account in reaching my conclusions. The Applicant has sought to introduce collaboration with the developers of the other solar NSIP schemes, not least through the shared [Grid Connection Corridor] which also facilitates shared communication and consultation potential and has sought to embed the potential for further collaboration in the fCTMP. Whilst there may be some effect interactions that would</i></p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-139 and RR-276 respectively	John Rapley and Shelley Rapley	Subsoil interest up to half width of highway	Scale of the Scheme and environmental impacts	My objections continue in regards to the massive and horrendously disruptive and destructive construction works which will take place, our roads here are tiny, only single track in many cases, and can not support the weight of traffic, let alone the size vehicles, that will be required to build this monstrosity. At present this	<p><u>Traffic and Transport Impacts</u></p> <p>A full and detailed assessment of potential traffic and transport impacts from construction at sensitive receptors has been undertaken within Chapter 16: Transport and Access of the Environmental Statement [APP-047]. The conclusions indicate that during construction, only one significant residual adverse effect is anticipated on severance, pedestrian delay and non-motorised</p>

occur, for example, landscape and visual amenity and noise and vibration, I am satisfied that there are no significant effects from effect interactions between differing effects on receptors, such that would increase the intensity and magnitude of effect. I agree with the Applicant's conclusions of the assessment of cumulative effects where two significant cumulative effects are identified on landscape and visual receptors."

In applying the planning balance, the Gate Burton Energy Park ExA at paragraph 5.3.13 of their report concluded that *"none of the matters which I have weighed against the Order being made, either in isolation or in combination, outweigh the significant benefits that I have identified."*

The Cottam Solar Project Environmental Statement Chapter 23 identified significant cumulative effects after embedded mitigation and mitigation measures have been applied with the Cottam Solar Project's ExA concluding on cumulative matters at paragraphs 3.13.30 of their recommendation report that:

"We are satisfied that the Applicant has adequately assessed the likely significant effects of the Proposed Development cumulatively with other planned development and that the Environmental Statement includes sufficient information on how the effects of the proposal would combine and interact with the effects of other development during construction, operation and decommissioning. Accordingly, we are satisfied that the requirements of the EIA Regulations, 2011 NPS EN-1 and 2024 NPS EN-1 are met."

The SoS confirmed at paragraph 7.3 of the Cottam Solar Project Decision Letter that he agreed with the Cottam Solar Project ExA's conclusions in respect of cumulative effects and that despite these impacts that the benefits of the proposed Cottam Solar Project outweigh its adverse impacts. The SoS goes on to state at paragraph 7.6 of the Cottam Solar Project Decision Letter decision that:

"The Secretary of State does not believe that the national need for the Proposed Development as set out in the relevant NPSs is outweighed by the Development's potential adverse impacts,"

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
				area is extremely quiet and the noise of the traffic and building works will be unbearable.	<p>users' amenity. This is in relation to severance, pedestrian delay (incorporating delay to all non-motorised users) on the B1241 (ATC 23). The significant adverse effect on the B1241 will only occur in the worst-case scenario for a short period of time if activity on the construction of the Cable Route Corridor is concentrated on the B1241 north of Fleets Road (in the order of a couple of weeks).</p> <p>The Framework Construction Traffic Management Plan (CTMP) [EN010142/APP/7.11(Rev02)] provides full details of embedded mitigation measures that are proposed to prevent or reduce potential adverse effects associated with construction traffic on local roads. A detailed CTMP (which must substantially accord with the Framework CTMP) will need to be approved post consent prior to construction with the relevant local authorities and this is secured by requirement 14 in Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev02)].</p> <p><u>Noise</u></p> <p>Construction noise effects are covered in section 13.8 of Chapter 13 Noise and Vibration [AS-006]. No significant effects on health and quality of life are identified. All reasonable measures would be adopted to reduce the impact of construction noise through measures secured in a Construction Environmental Management Plan (CEMP). The CEMP will be secured by requirement 12 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] and will need to be substantially in accordance with the Framework CEMP [EN010142/APP/7.7(Rev 01)].</p>
RR-139 and RR-276 respectively	John Rapley and Shelley Rapley	Subsoil interest up to half width of highway	Scale of the Scheme and environmental impacts	My wife and I moved here for the peace and quiet and should this development go ahead it will turn our area into an industrialised zone for the rest of our life spans. Solar belongs on roof tops not on farmland.	<p><u>Need</u></p> <p>As discussed in the Statement of Need [APP-210] the Applicant recognises that decentralised energy generation on roof tops has an important role to play in decarbonisation, however, on its own smaller scale solar, including rooftop solar, is not likely to deliver a sufficient total capacity at the required pace and at an affordable cost to meet the Government's targets. Whilst rooftop solar is likely to contribute to decarbonisation, large-scale solar is still an essential part of the future electricity system, that must be deployed where there is the natural resource, where land is available and suitable, and in proximity to available grid connection locations, such as the area local to the Scheme.</p>
RR-139 and RR-276 respectively	John Rapley and Shelley Rapley	Subsoil interest up to half width of highway	Scale of the Scheme and environmental impacts	I work in the electrical industry and know full well that solar panels are not as green as many would have us believe. The efficiency of panels are generally between 20%-40% at best. The minerals used to make these panels are often mined unethically and impact their local environments and populations with extremely negative effect. Tillbridge Solar in particular is owned	<p><u>Supply chain</u></p> <p>The Applicant is committed to an ethical supply chain. Within the Framework Skills, Supply Chain and Employment Plan (SSCEP) [APP-232] the Applicant has set out an ethical procurement strategy (see section 5.4). The Framework SSCEP will be updated subject to the Scheme receiving development consent and reaching the detailed design stage. Adherence to the</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>by Canadian Solar who are owned by a Chinese company where links between human rights abuses and the production of solar panels is well documented. If this weren't enough of a global environmental issue, solar panels also reflect around 70% of the Sun's heat back up into the atmosphere, not a good thing with the current concerns over global temperature rises which contribute to global climate change and an increase in more extreme weather in our historically moderate climate.</p>	<p>ethical procurement strategy contained within the SSCEP will be secured by a requirement of the draft DCO [EN010142/APP/3.1(Rev02)]. This should give confidence that the procurement process will be carried out to a high standard.</p> <p><u>Climate Change</u></p> <p>Please refer to the lifecycle Greenhouse Gas Emissions (GHG) Impact Assessment within Chapter 7 Climate Change of the Environmental Statement [APP-038]. This considers all GHG emissions arising over the lifecycle of the Scheme including direct GHG emissions arising from activities within the Order limits and indirect emissions from activities outside the Order limits and embodied carbon within construction materials. The reflective impact of solar panels has not been scoped into this assessment as they are not considered a source of GHG emissions. Radiation reflected by solar panels (or any other reflective surface of the earth i.e. polar ice caps) in fact mitigates the greenhouse effect and climate change, reflecting shorter wavelength energy back into space before it can be absorbed by the greenhouse gases within our atmosphere. Chapter 7 Climate Change of the Environmental Statement [APP-038] demonstrates that the Scheme will generate GHG savings throughout the lifetime of the Scheme and demonstrates the role solar energy generation has to play in the transition to a low carbon economy. This is supported by government policy including the Overarching National Policy Statement for Energy (NPS EN-1), which confirms that wind and solar generation systems are vital to achieving its decarbonisation plan to reach net zero GHG emissions by 2050.</p>
RR-139 and RR-276 respectively	John Rapley and Shelley Rapley	Subsoil interest up to half width of highway	Scale of the Scheme and environmental impacts	<p>The land here is good quality farm land which can be used to provide the country with greater food security in the future and should not be wasted. The industrial destruction of the land will mean, despite Tillbridge Solar's claims, it will not return to land suitable for food production for generations, if ever.</p>	<p><u>Loss of agricultural land</u></p> <p>Agricultural land quality was a key consideration in the Applicant's site selection process as set out in paragraph 4.5.13 of Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and paragraph 3.5.5 of the Design and Access Statement [AS-031].</p> <p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into account reductions to the Order limits following the Applicant's Change Request (which was granted on 24 October 2024), for the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
					<p>agricultural land conditions is provided within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p> <p>As set out in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. All other infrastructure will be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a Decommissioning Environmental Management Plan (DEMP). In accordance with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)] submitted as part of the Application. The only potential permanent removal of land from agricultural use may result from proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However, the potential change of use of 0.07% of agricultural land that is BMV land to proposed woodland is not considered to be significant and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60-year operational period has the potential to accrue improvement to soil function over a large area. Whilst not food production, woodland presents benefits provided by the Scheme in terms of biodiversity and provides future opportunities for farm diversification.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 of Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire. Land can continue in agricultural production through the operational phase and that following operation, the land used for the Scheme can revert back to current agricultural management.</p> <p>Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] assesses the loss of agricultural land in combination with all cumulative solar schemes (Gate Burton Energy Park, West Burton Solar Project and Cottam Solar Project and others set out in Table 18-22 in Chapter 18 of the Environmental Statement [APP-049]). This confirms that in combination with all cumulative solar developments that there is still not a significant effect on agricultural production as a result of these schemes. The area of agricultural land that would be temporarily taken out agricultural use across all four schemes would be 2.2% of agricultural land in Lincolnshire.</p> <p>The Applicant has also prepared a report setting out the cumulative effects of solar projects on BMV land within Lincolnshire, which is located at Appendix B</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
					<p>of this document. This report further concludes that the potential permanent loss of BMV land in Lincolnshire as a result of solar DCO projects would be 0.8%, and would be 0.27% as a result of ground mounted solar TCPA projects. This amounts to only 0.9% of all BMV land within Lincolnshire permanently lost to solar projects within Lincolnshire.</p> <p>The Secretary of State in his recent decisions for Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] recognised the local concerns on the loss of productive agricultural land but concluded that, on a cumulative basis alongside the other solar projects (including the Tillbridge Solar Project), that the cumulative assessments forming part of each application have suitably considered cumulative effects. The Secretary of State at paragraph 4.178 of the Gate Burton Energy Park decision states that the <i>“cumulative loss of BMV land in Lincolnshire due to NSIP solar projects amounts to 0.83% of the total BMV land with a further 0.21% loss to TCPA solar projects. The Secretary of State considers that this is only around 1% of the total BMV land in Lincolnshire, further noting that the land will be lost for a temporary, albeit long-term period and that the land can be returned upon decommissioning of development to its original state. The Secretary of State places great importance on BMV land but is satisfied that the siting of the Proposed Development on BMV land has been justified.”</i></p> <p>The Tillbridge Solar Project, through its site selection process sought to minimise impacts upon BMV land and through design iteration of the Scheme, has further minimised impacts. The siting of the Scheme on BMV land is justified and the loss of agricultural land and therefore potential food production would be temporary and reversible allowing the Principal Site to be brought back into agricultural use following decommissioning.</p> <p>In the recent Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] decisions, the Secretary of State (SoS), determined that the cumulative loss of BMV land across these two schemes, together with West Burton and the Tillbridge Solar Project, and therefore the potential impact upon agricultural land and food production, will be minor and would not impact food security when these four solar NSIPs are considered both individually and cumulatively. The SoS agreed with the ExA's recommendations on agricultural land use in considering the Gate Burton Energy Park. The ExA confirmed in its recommendation report at paragraph 3.11.114 that:</p> <p><i>“Whilst I appreciate the concerns of many IPs and the concerns expressed there is no meaningful assessment of the extent of lost production. Furthermore, given the national and regional figures identified by the Applicant in respect of cereal production even taking account of the whole site area there would be little discernible effect. This would be true even in a cumulative scenario on the basis of the figures produced by the Applicant.”</i></p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-139 and RR-276 respectively	John Rapley and Shelley Rapley	Subsoil interest up to half width of highway	Scale of the Scheme and environmental impacts	Upon talking to Tillbridge at a community meeting one of their representatives informed us that they have no definitive plan on how to recycle these panels just that they would work that out later, or indeed any details how to or who would make good the land, and that the company were in it for the money. This to me sums up the uncaring approach this company has to the local and global environment they are claiming their industrial installation is going to help save. In no way do I believe this industrial development should be allowed to go ahead.	<p><u>Recycling of Panels and Other Equipment</u></p> <p>As set out in Table 3-16 of the Framework OEMP [EN010142/APP/7.9(Rev01)] and Table 3-15 of Framework DEMP [EN010142/APP/7.10(Rev01)], the Applicant is committed to maximising recycling and reuse of the Scheme components at the end of their life and commit to recycle 70% of waste during the operational and decommissioning phases. This is secured by Requirement 13 and 20 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], which require these framework documents to be the basis for a final detailed OEMP and DEMP respectively that will need to be approved by the Local Planning Authority prior to construction.</p> <p>There are already organisations around the UK and Europe specialising in solar recycling, such as PV Cycle and the European Recycling Platform. They are working with solar developers to minimise electrical waste and recycling old panels in line with the Waste Electrical and Electronic Equipment (WEEE) Regulations (Ref 1-8). In addition, companies like SECONDSOL offer a marketplace service for the purchase and selling of second-hand PV panels and equipment, where there is still a good level of life in the equipment remaining. Panels that have developed faults or damage can also be refurbished and repowered by specialist companies and the manufacturers and resold or reinstalled. The Applicant will adhere with the industry best practice outlined in Solar Power Europe's Lifecycle Quality Best Practice Guidance.</p> <p><u>Reinstatement of Land</u></p> <p>The vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following decommissioning of the Scheme. Decommissioning of the Scheme and restoration/reinstatement of the land back to its former condition after 60 years is required and secured via requirement 20 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p>
RR-078	Dr Terence David Organ	Subsoil interest up to half width of highway	Loss of agricultural land and food production	The main issues and impacts are first the loss of food producing land and secondly the damage to our rural environment by the necessity to take out trees and hedges to widen our country lanes. Furthermore, this is the 4 th of such schemes in our locality, three being in close proximity to our farmland where we have cattle grazing. In fairness to our local community, these schemes should be considered together because the overall impact of Cottam, West Burton, Gate Burton and now this is immense here. Tillbridge Solar are wanting to run cables very close to our property, Cottam and West Burton will have solar panels next to us. The other issues are that panels would be better placed on roofs and that when we need the most energy in the winter they produce less than 25% of that in the summer (to judge by the panels on our house	The Applicant recognises that the potential for future changes and potential impacts associated with the Scheme may be a source of concern for local residents. The Secretary of State will need to balance those impacts and changes against the urgent need and critical national priority for the Scheme as set out in Government policy. Although the Applicant acknowledges that there will be some adverse impacts arising from the Scheme, with regard to landscape and visual and associated impacts to health and mental wellbeing, the Applicant has sought to avoid, mitigate and minimise these impacts as much as possible, and has prepared a number of management plans that will ensure that impacts are kept to a minimum. Overall, the Applicant's position is that in terms of the overall planning balance, the clear and substantial benefits of the Scheme outweigh any adverse effects, which would be localised, short-term, temporary and/or reversible at the end of the Scheme's lifetime. The Applicant has addressed the comments raised in this relevant representation, as set out below:

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>roof). Wind turbines would be much better. producing more energy in the winter and not reducing food production. Given the ever increasing population we will need more food in future.</p>	<p><u>Agricultural land</u></p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 (Assessment of Likely Impacts and Effects) in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. The chapter concludes that there are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire and that following operation, the land used for the Scheme can be reverted back to agricultural land.</p> <p><u>Buffers</u></p> <p>The Applicant wished to reassure local residents that from the outset, the Scheme has been designed to avoid key nature conservation and ecological features present within or adjacent to the Order limits. Accordingly, the following buffers from key habitat features have been applied and are detailed in the Framework Construction Environmental Management Plan [EN010142/APP/7.8(Rev01)] and the Framework Landscape and Ecological Management Plan [EN010142/APP/7.17(Rev02)]:</p> <ul style="list-style-type: none"> • All woodland – at least 15 m; • All trees within hedgerows and individual trees – protected by clearly defined root protection areas, concordant with the requirements for each individual tree as detailed in Appendix 12-7: Arboricultural Impact Assessment of the Environmental Statement [APP-107 to APP-109]; • Watercourses (where practicable) – at least 10 m from the bank-top of the watercourse; • Standing water – at least 20 m; and • Hedgerows – where practicable, at least 5 m. <p><u>Access strategy and highway works</u></p> <p>In terms of widening of lanes, the Application includes details of preliminary designs for the proposed accesses required during the construction phase of the Scheme, which are set out within section 6 of the Framework CTMP [EN010142/APP/7.11(Rev02)]. It notes that the accesses for the Principal Site to be used during construction and operation all use existing accesses. The proposed accesses will be designed to ensure that the Scheme minimises hedgerow loss, whilst also ensuring adequate visibility for construction vehicles, to accommodate swept paths and to support improvements to take place within the highway boundary and/or Order limits if required. This could include carriageway widening and vegetation clearance, however as a principle, the access strategy has sought to minimise impacts of accesses upon hedgerows. The Hedgerow Removal Plan [AS-044] and Schedule 12 of the draft DCO</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
					<p>[EN010142/APP/3.1(Rev03)] sets out the hedgerows to be removed. Whilst the Applicant acknowledges there will be impacts, through embedded mitigation and enhancements built into the Scheme, as set out in the Framework LEMP [EN010142/APP/7.17(Rev02)] and the Indicative Landscape Masterplan [AS-064], there will not be a significant effect.</p> <p>The Framework CTMP [EN010142/APP/7.11(Rev02)] at paragraph 7.3.6 sets out in more detail the highway works proposed as part of the Scheme. This includes:</p> <ul style="list-style-type: none"> • Junction improvements at Junction of A631 Harpswell Lane with School Lane, Junction of A1500 Tillbridge Lane with Stow Park Road, and Junction of Stow Park Road with Wooden Lane; • Alteration of road layout to facilitate localised carriageway widening for construction vehicles on Fillingham Lane, South Lane, and Wooden Lane; • Provision of new access points; and • Construction of passing bays, vegetation clearance and potential carriageway widening. <p>The detailed design of the Scheme and its accesses and highway works will come forward during the detailed design phase of the Scheme. This will be based on the measures set out in the Outline Design Principles Statement [AS-058], Framework CTMP [EN010142/APP/7.11(Rev02)], Framework LEMP [EN010142/APP/7.17(Rev02)] and other management plans where relevant. Detailed versions of these management plans, which will be substantially in accordance with the framework plans, will need to be approved by the Local Planning Authority (/Authorities), and any works relating to the detailed design, including highway works, will need to be carried out in accordance with the detailed management plans. This is secured, by law, by a number of requirements in the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p><u>Cumulative impacts</u></p> <p>The Applicant understands that local residents may have queries around the potential cumulative effects of four solar projects in the area, and has therefore undertaken an assessment of cumulative impacts of the Scheme with other existing and proposed energy developments as well as other developments in the locality, which is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049].</p> <p>The Applicant and the promoters of the other solar DCOs in the vicinity (being Gate Burton Energy Park, Cottam Solar Project and West Burton Solar Project) have worked collaboratively during design development and environmental assessments, including identification of a shared cable corridor, sharing</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
					<p>baseline environment information and identification of shared mitigation measures. Consideration has also been given as to how habitat creations link with other proposed developments and more widely across the landscape.</p> <p>Significant cumulative effects have been identified on three landscape character areas and eight representative views during construction and decommissioning however these are temporary and short term, for the duration of the construction period. A temporary significant beneficial effect from the generation of construction employment at a local scale was also identified.</p> <p>The Scheme would only result in significant cumulative effects on Local Landscape Character Area 3A Till Vale at year 15 of operation, and two significant visual effects at Viewpoint 7 on the B1398 Middle Street, Glentworth Cliff Farm and Viewpoint 13 at public footpath (Hems/787/2) on Lincoln Cliff, Hemswell at year 15 of operation. All other cumulative effects have been assessed as not significant. Cumulative landscape and visual impacts will be managed in accordance with the relevant environmental management plans, including the Framework LEMP [EN010142/APP/7.17(Rev02)].</p> <p>Further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is provided in the Joint Report on the Interrelationship with other National Infrastructure projects [APP-215 to APP-217].</p> <p><u>Rooftop solar</u></p> <p>The Applicant wishes to note that the Government has identified through its energy policy, most recently in the Overarching National Policy Statement for Energy EN-1 and National Policy Statement for Renewable Energy EN-3, that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p> <p>As discussed in the Statement of Need [APP-210] the Applicant recognises that decentralised energy generation on roof tops has an important role to play in decarbonisation, however on its own, smaller scale solar, including rooftop solar, is not likely to deliver a sufficient total capacity at the required pace and at an affordable cost to meet the Government's targets. Whilst rooftop solar is likely to contribute to decarbonisation, large-scale solar is still an essential part of the future electricity system, that must be deployed where there is the natural resource, where land is available and suitable, and in proximity to available grid connection locations, such as the area local to the Scheme.</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-307	Timothy Robert Elwess	Freehold, Occupier, and Subsoil up to half width of highway	Support for the Scheme	<p>Hello, I am fully supportive of this project. As you will be able to see, my farm and residence is one of the most influenced by this scheme. Currently, I grow grass and wheat, both of which are processed into energy. I do not grow crops for human consumption in most years. The grass is then grazed. Replacing this with solar would: 1) increase the energy output per acre. 2) replace a low and highly variable income with a secure, long term income. 3) still allow grazing to continue. Please note my extended family have successfully grazed under solar panels before in West Lindsey. As farm businesses in the UK have expanded with more productive machinery, I find the number of days I work on farm to have continued to decline. I already work "off farm" for several days a week, and will be working full-time from September in education in the local area. This scheme will allow a great change in how I farm; will enable me to pursue a new career. The net effect will be job creation in an area where these are needed, along with many opportunities during construction. I am hopeful that the developers will be looking to support things like apprenticeships during the build phase. I have no problem with my house having panels around it. We have had input as regards screening. Please be advised that I intend to ask to speak during the examination, and will likely be doing so on behalf of a number of landowners and identified residential noise receptors, of which I am one. I would hope to do this at the earliest opportunity. Many thanks, Tim.</p>	The Applicant welcomes and notes this comment.
RR-013	Alison Rachel Elwess	Freehold, Occupier and Subsoil interest up to half width of highway	Support for the Scheme	<p>I am the joint owner of some of the land affected by the proposed development. I am in favour of the proposed development, as it will contribute to the efforts needed to move away from burning fossil fuels for our energy needs.</p>	The Applicant welcomes and notes this comment.
RR-062	David Andrew Elwess	Freehold, Occupier and Subsoil interest up to half width of highway	Support for the Scheme	<p>My wife and I are nearing our 70s, well over state retirement age and are looking forward to a regular income rather than one reflecting market irregularities and being able to remain in our own home.</p>	The Applicant welcomes and notes this comment.
RR-068	Deborah Elwess	Freehold, Occupier and Subsoil interest up to half width of highway	Support for the Scheme	<p>I am happy with this scheme to go ahead. The Company has engaged with me regarding screening and have incorporated my comments into its project on areas around my home. I will be able to continue to be employed at a farm within the proposed site.</p>	The Applicant welcomes and notes this comment.

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-089	Elizabeth Scott	Subsoil interest up to half width of highway	Solar on rooftops	Land for food first not solar panels these need to be installed on new buildings supermarket car park buildings etc	<p>The Applicant wishes to highlight that the Government has identified through its energy policy, most recently in the Overarching National Policy Statement for Energy EN-1 and National Policy Statement for Renewable Energy EN-3, that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p> <p>As discussed in the Statement of Need [APP-210] the Applicant recognises that decentralised energy generation on roof tops has an important role to play in decarbonisation, however on its own, smaller scale solar, including rooftop solar, is not likely to deliver a sufficient total capacity at the required pace and at an affordable cost to meet the Government's targets. Whilst rooftop solar is likely to contribute to decarbonisation, large-scale solar is still an essential part of the future electricity system, that must be deployed where there is the natural resource, where land is available and suitable, and in proximity to available grid connection locations, such as the area local to the Scheme.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 (Assessment of Likely Impacts and Effects) in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction, operation and decommissioning phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire and that following decommissioning, the land used for the Scheme can be reverted back to agricultural land. The change of use from predominantly intensive arable farming to semi-improved grassland across the Order limits will be beneficial to the structure and quality of soils, making it suitable for reversion to agricultural use.</p>
RR-209	Elizabeth Scott on behalf of Neil Scott	Subsoil interest up to half width of highway	Solar in the countryside	The countryside should not be used for solar power crops first always	<p>The Applicant has chosen the current site for the Scheme following a site selection process based upon considerations of irradiance (sunlight) and the identification of relatively low lying and flat topography landscape to maximise energy generation within the east of England. The Applicant has also taken a sequential approach to the use of agricultural land considering whether land of lower quality / grade is available and suitable. Following the identification of an area of search derived from the point of connection at the National Grid Cottam Substation, the Applicant did not identify any alternative sites that would be of a lower grade agricultural land (compared to the majority of the Order limits) that were available or considered suitable for the Scheme and its objectives. The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). For the Principal Site, 95.5% of the land used is non-BMV land.</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-169	Lorraine Broadbent	Subsoil interest up to half width of highway	Landscape and visual impacts and impacts on single track roads	<p>My family and I live on a property near the edge of the Tillbridge project. Where it ends the Cottom project takes over. We are completely surrounded. We moved here twenty years ago because we wanted to live in a rural area with quiet roads so we could exercise our horses in relative safety. If this project is given the go ahead the landscape would completely change. The single track roads would be too dangerous for us to continue using for horse riding and everything we enjoy about the countryside would be lost. If the solar panels really were the answer to the country's energy problems I would not object but I sincerely believe they are not. We have just had an incredibly wet winter, spring and early summer with dull cloudy skies totally unsuitable for producing power. The figures we are given for how much power will be produced are given to us by the salesmen and are questionable. There needs to be independent research into their real figures. Why sacrifice good, productive arable land that we know produces the food we need to feed our country, for acres and acres of metal and plastic that might only produce a fraction of the power we need it to? With how quickly technology improves, it is likely that these solar panels will be outdated and considered obsolete by the time the Tillbridge project is completed, leaving the land around us permanently scarred in pursuit of a white elephant.</p>	<p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 (Assessment of Likely Impacts and Effects) in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire and that following operation, the land used for the Scheme can be reverted back to agricultural land.</p> <p>The Applicant acknowledges that the rural roads close to the Principal Site are frequently used for recreational purposes including horse riding, particularly due to the lack of alternative routes such as bridleways. The design of the Scheme has been developed to limit visual effects on these routes, including the use of new hedgerows that will limit views of solar infrastructure when mature at the Year 15 stage.</p> <p>HGVs during the construction phase will be expected to follow the proposed HGV routes which are set out in Figure 16-3: Proposed HGV Routes - Principal Site and Cable Route Corridor of the Environmental Statement [APP-195] and trips will be staggered across the working day within an 8-hour window. Mitigation measures to minimise construction traffic impacts will be identified within the Framework CTMP [EN010142/APP/7.11(Rev02)] and the Framework PRoW Management Plan [APP-228]. A detailed CTMP and PRoW Management Plan, which will be required to be substantially in accordance with the Framework CTMP and Framework PRoW Management Plan, respectively, will need to be approved by the Local Planning Authority (/Authorities) prior to construction. This is secured by requirements 14 (CTMP) and 16 (PRoW) in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>In addition, two permissive paths will be incorporated into the Scheme, both providing traffic-free north-south access from Common Lane to Kexby Road (refer to Figure 3-1: Indicative Principal Site Layout Plan of the Environmental Statement [AS-055]). These paths will be accessible to horse riders and accommodated within 25m wide corridors that will allow sufficient space for screen planting.</p> <p>As set out in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035], the Government's plans, as set out in Powering Up Britain state that "Our goal is to develop up to 50 GW of offshore wind by 2030 and to quintuple our solar power by 2035" (page 7). Powering Up Britain's Energy Security Plan explicitly states that the Government is "aiming for 70 gigawatts of ground and rooftop [solar] capacity together by 2035" because "Ground-mounted solar is one of the cheapest forms of electricity generation and is readily deployable at scale. The government seeks large scale ground-mount solar deployment across the UK, looking for development mainly on brownfield, industrial and low and medium grade agricultural land"</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-259	Robyn Eleanor Broughton	Subsoil interest up to half width of highway	Adequacy of consultation, traffic impacts and ecology	I have found this company difficult to deal with so far. The map I was sent has no meaningful key on it, and my house and land was also circled in red. I enquired about this on the email address supplied. I got a response informing me they would be in touch as soon	<p>(pages 37-38). The importance of solar as a reliable source of energy generation within the UK is recognised by Government policy. The Applicant has provided a Statement of Need [APP-210] which outlines the suitability of solar in the UK and in the East Midlands in particular which has above average levels of irradiation. The Applicant has secured a 500MW bilateral connection agreement with the national electricity transmission system at the Cottam National Grid Substation. The aim of the Scheme is to generate electricity in order to maximise the use of this connection capacity. The Scheme is being brought forward with a BESS as associated development in order to help regularise the supply of renewable energy that it can export to the national electricity system given the intermittency in generation that can be caused by time and weather.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 (Assessment of Likely Impacts and Effects) in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire and that following operation, the land used for the Scheme can revert back to agricultural land.</p> <p>Solar panel technology is indeed evolving rapidly, but current projections indicate that the panels used in the Scheme will remain efficient and effective throughout their operational lifespan. The Scheme is designed with future upgrades in mind to ensure ongoing relevance and utility as evidenced in Chapter 3: Scheme Description, paragraph 3.4.6 of the Environmental Statement [AS-053], and its positive environmental impact will provide long-term value while keeping pace with technological advancements. Additionally, the Scheme is time-limited with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)] requiring that the Scheme is decommissioned no later than 60 years following the date of final commissioning. Following decommissioning, the Principal Site will need to be restored and reinstated back to its previous condition in accordance with the Decommissioning Environmental Management Plan (DEMP) to be approved by the relevant planning authority (/authorities). The DEMP will need to be in substantial accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)] submitted as part of the Application. This DEMP will include mitigation and enhancement measures to ensure that the land is reinstated to a condition approved by the relevant planning authority.</p>
					Throughout the pre-application consultation, the Applicant has sought to provide and present information in the most accessible ways, including clear maps showing the extent of the Scheme. The Applicant has remained contactable throughout the pre-application period and clarified stakeholder interests in relation to the Scheme, letting them know that they have a subsoil interest in the

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
				<p>as possible if I have my full address. I did so, and heard nothing for 2 weeks so had to chase a response. I was informed that this has been sent to you as your property (and land) is located in close proximity to the public highway that will be utilised for the construction of the Scheme. As you're located adjacent to the highway, you are defined as having a 'subsoil' interest and may be indirectly affected by the vehicle movements and/or any proposed road improvements to help support the construction of the Scheme. This worries me as the road they propose to use next to our house (Stow Road, junction with the A1500) floods in heavy rain. Will the lorries stop using this road if it's flooded, as heavy traffic causes flood water to wave into our garden and house during heavy periods in the winter. This winter has been so wet that or field has still not dried out, and it is usually fine by march, so the water may not dissipate as easily as it has done in the past either. What is being done to preserve wildlife in the area? There are lots of deer, ducks, moorhens and coots here. Are there provisions to not damage their ability to use their habitats and their numbers?</p>	<p>land, as set out in the Book of Reference [EN010142/APP/4.3 (Rev02)], which qualifies certain interests where a landowner adjacent to a public or private highway is presumed to own the land that their property stands on and also the subsoil up to the centre point of the highway.</p> <p>In relation to flooding on roads, the Framework CEMP [EN010142/APP/7.8(Rev01)] provides details of how the Scheme will be managed in relation to surface water and flooding on roads, which will be used by construction vehicles or be subject to road improvements. A detailed CEMP, which will be substantially in accordance with the Framework CEMP [EN010142/APP/7.8(Rev01)], is required to be approved by the relevant planning authority (/authorities) prior to construction as secured by requirement 12 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. The measures set out in the Framework CEMP [EN010142/APP/7.8(Rev01)] include:</p> <ul style="list-style-type: none"> • Appointing a Flood Warden who will have a dedicated responsibility to be prepared for, and manage, the response to flood incidents and warnings, by using the Floodline Warnings Direct or equivalent service. • Developing an Emergency Response Plan (ERP) in consultation with the relevant local authority emergency planning officer, emergency services including the local fire service, as well as the Environment Agency in relation to responding to flood warnings and events. • Ensuring standard and best practice control measures including monitoring weather forecasts on a monthly, weekly and daily basis, and planning works accordingly. For example, works in the channel of any watercourse will be avoided or halted were there to be a significant risk of high flows or flooding. <p>In addition, measures are also set out in the Framework CTMP [EN010142/APP/7.11(Rev02)] to ensure that, during times of flood for example, wherever possible access for emergency vehicles, pedestrians and cyclists will be maintained during the temporary closures. Advance warning will be provided in line with local highway authority guidance and diversion routes will be put in place. A Transport/Travel Plan Co-ordinator will also be appointed as set out in the Framework CTMP [EN010142/APP/7.11(Rev02)] who will liaise proactively as appropriate with the emergency services, to manage activities in the event of a flood emergency.</p> <p>With regard to the protection of ecology and wildlife in the area, the Applicant has undertaken detailed ecological surveys to understand the habitats and species present. Full details of these surveys are provided in Table 9-11 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with further details set out in Appendices 9-1 to 9-12 of the Environmental Statement [APP-081 to APP-094] and [EN010142/APP/6.2(Rev01)].</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-063	David Broadbent	Subsoil interest up to half width of highway	Loss of land for food production	I wish to register my objection to the use of solar panels on our local farmland. It is my opinion that the production of food should be given priority over the production of energy. Furthermore I am of the opinion that the production of energy through solar panels is a poor return on investment, due to their inefficacy.	<p>A detailed assessment of the potential impacts of the Scheme on biodiversity is presented in section 9.9 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040], with particular reference to Tables 9-14 and 9-15. The Applicant has carefully designed the Scheme to avoid or minimise adverse effects to biodiversity, with substantial measures embedded and detailed in Table 9-13 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040].</p> <p>The assessment in section 9.9 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040] concludes that there will be no significant adverse effects on biodiversity, with significant beneficial effects to a variety of habitats, including broad-leaved woodland, running water, hedgerows and species, including breeding birds, particularly farmland birds associated with hedgerows and field margins.</p> <p>The Scheme accords with NPS EN-1 (Ref 1-17) in building-in beneficial biodiversity as part of good design. Although it is not mandatory for NSIPs until 2025, the Scheme will deliver a minimum 10% gain for biodiversity secured by both requirements 7 (landscape and ecological management plan) and 8 (biodiversity net gain) of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. Requirement 8 provides that construction cannot commence until a BNG strategy has been submitted and approved by the relevant planning authority, in consultation with the relevant statutory nature conservation body (being Natural England). The BNG strategy must be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)], which states at paragraph 4.6.2 that the Applicant is committed to achieving a minimum of 10% BNG, in accordance with the terms of the Biodiversity Net Gain Report [AS-062].</p> <p>The Applicant wishes to highlight that the Government has identified through its energy policy, most recently in the Overarching National Policy Statement for Energy EN-1 and National Policy Statement for Renewable Energy EN-3, that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p> <p>The Scheme will deliver large amounts of cheap, secure and low-carbon electricity both during and beyond the critical 2020s timeframe. Maximising the capacity of generation in the resource-rich, well-connected and technically deliverable proposed location for the Scheme, represents a significant and economically rational step forwards in the fight against the global climate emergency.</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-283	Sophie Dhokia	Subsoil interest up to half width of highway	Noise or radiation impacts and loss of land for food production	My home will be surrounded by the solar farm. I live next to some of the farmland that will be used if given the go ahead. is vital that we keep our farmland for food and use either put solar on roofs or brown filled land. Other forms of green energy are available to us we don't need to use farmland. The humming of the panels and the radiation given off from the panels will be enormous and not only bad for my families health but our mental health too. We moved here to be in clean fresh air not to be polluted by this. With other solar farms being given the go ahead all over the country I really don't feel we need as much as this especially in one a.	<p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 (Assessment of Likely Impacts and Effects) in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire and that following operation, the land used for the Scheme can be reverted back to agricultural land.</p> <p>With regards to the efficiency of solar panels, the Applicant notes that solar panels have demonstrated a strong return on investment due to their low operational costs and the significant long-term savings on energy both for the operator and consumer. Advances in technology have improved their efficiency, and the cost of solar energy continues to decrease. Furthermore, solar power provides substantial environmental benefits, including reduced greenhouse gas emissions and decreased reliance on fossil fuels. The overall value of solar energy extends beyond financial returns, contributing positively to sustainable energy goals and climate protection.</p>
					<p>The Applicant recognises that the potential for future changes and potential impacts associated with the Scheme may be a source of concern for local residents. The Secretary of State will need to balance those impacts and changes against the urgent need and critical national priority for the Scheme as set out in Government policy. Although the Applicant acknowledges that there will be some adverse impacts arising from the Scheme, with regard to landscape and visual and associated impacts to health and mental wellbeing, the Applicant has sought to avoid, mitigate and minimise these impacts as much as possible, and has prepared a number of management plans that will ensure that impacts are kept to a minimum. Overall, the Applicant's position is that in terms of the overall planning balance, the clear and substantial benefits of the Scheme outweigh any adverse effects, which would be localised, short-term, temporary and/or reversible at the end of the Scheme's lifetime.</p>
					<p>The Applicant has carried out an assessment of the Scheme on human health, including mental health, as set out in Chapter 11: Human Health within the Environmental Statement [APP-042]. The assessment takes a holistic approach to health and considers a wide range of health determinants which are relevant to quality of life and amenity. The assessment considers elements of the Scheme which could affect mental health (for example changes in landscape and visual amenity, noise, access to open space and employment) as well as physical health (for example associated with air pollution). The Chapter concludes that no significant adverse effects are identified with regards to human health.</p>
					<p>The Applicant also wishes to highlight that the Government has identified through its energy policy, most recently in the Overarching National Policy</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
					<p>Statement for Energy EN-1 and National Policy Statement for Renewable Energy EN-3, that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p> <p>As discussed in the Statement of Need [APP-210], the Applicant recognises that decentralised energy generation on roof tops has an important role to play in decarbonisation, however on its own, smaller scale solar, including rooftop solar, is not likely to deliver a sufficient total capacity at the required pace and at an affordable cost to meet the Government's targets. Whilst rooftop solar is likely to contribute to decarbonisation, large-scale solar is still an essential part of the future electricity system, that must be deployed where there is the natural resource, where land is available and suitable, and in proximity to available grid connection locations, such as the area local to the Scheme.</p> <p>In terms of the selection of the site for the Scheme, in accordance with NPS EN-1 (Ref 1-17) paragraph 5.11.3 and NPS EN-3 (Ref 1-18) paragraph 2.10.29, the Applicant considered the use of previously developed (i.e. brownfield) land and did not identify any available land within its area of search of an appropriate size to locate the Scheme.</p> <p>The Applicant has also taken a sequential approach to the use of agricultural land considering whether land of lower grade is available and suitable. Following the identification of an area of search derived from the point of connection at the National Grid Cottam Substation the Applicant did not identify any alternative sites which would be of lower grade agricultural land (compared to the majority of the Order limits) that were available or considered suitable for the Scheme and its objectives.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 (Assessment of Likely Impacts and Effects) in Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire and that following operation, the land used for the Scheme can be reverted back to agricultural land.</p> <p>With regards to humming from solar panels, a set out in Chapter 13: Noise and Vibration of the Environmental Statement [AS-006] no exceedances of the Significant Observed Adverse Effect Level (SOAEL) are predicted during the operational phase of the Scheme and therefore there are no significant effects.</p>

RR Ref. No.	IP Name	Land Interest	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-322	Victoria Elwess	Farming	Support for the Scheme	<p>As one of the farmers affected by this development, I would like to register my full support for the Tillbridge Solar project proposal. Having successfully grazed sheep under solar panels in West Lindsey, I am confident that the panels will compliment our free range egg farming business. The proposed solar development will have a positive impact on employment for our farm. The guaranteed income from the solar project will allow us to concentrate on developing our egg business, securing current levels of employment and hopefully providing for expansion in the future. Having studied Environmental Science at degree level I have a strong interest in the development of more planet friendly sources of electricity generation. As such, we already have solar panels on both our free range chicken shed and our home. I was very excited to hear about this project from its outset and am very much looking forward to seeing this proposal come to fruition.</p>	<p>The Applicant notes the concerns raised regarding “radiation” around electric and electro-magnetic fields. Section 17.9 of Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048] provides an assessment of the potential impacts associated with Electric and Electro-Magnetic Fields (EMF). This explains that EMFs are produced by the flow of electric current, which runs through cables. Solar panels are not assessed in the chapter as they generate extremely low, non-ionizing and harmless EMFs. The scope of the assessment on EMFs was requested by the Planning Inspectorate to only focus on cabling. Section 17.9 of Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048] explains that cables would be installed at a minimum of 10 m from the façade of any residential dwelling, as confirmed in the Outline Design Principles Statement [AS-058] (which is secured by a requirement in Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)]). Therefore, no significant adverse effects to residential receptors from EMFs are predicted to occur. Section 17.9 of Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048] also states that the presence of the public using PRoW either directly above or adjacent to underground cables associated with the Scheme would be transient and it is considered that the level of exposure to users of PRoW would be similar to that associated with general household appliances (and noticeably less than associated with the exposure when using certain appliances, e.g. a vacuum cleaner). Therefore, no significant effects to users of PRoW are predicted to occur.</p>
					<p>The Applicant welcomes and notes this comment.</p>

2.6 Public Comments

Air Quality

Table 2-6: Applicants Responses to Public Relevant Representations relating to Air Quality

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-227, RR-329	Air quality impacts	Concerns regarding air pollution caused by construction and operation.	<p>Section 6.8 of Chapter 6: Air Quality of the Environmental Statement [APP-037] confirms that the Scheme will not have any likely significant adverse effects on air quality with respect to dust emissions or impacts upon air quality through construction and decommissioning traffic. This is also acknowledged and agreed by the UK Health Security Agency, as set out in Appendix I of the Consultation Report Appendices [APP-030]. An assessment of air quality effects during operation was scoped out as there would be no air quality effects due to the nature of the Scheme.</p> <p>The implementation of good practice during construction and decommissioning secured by the Framework CEMP [EN010142/APP/7.8(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] will ensure that the environmental risk of the Scheme on air quality in relation to dust and construction and decommissioning traffic remain low.</p> <p>A detailed CEMP and DEMP which will need to be substantially in accordance with the Framework CEMP and Framework DEMP respectively will need to be agreed with the relevant planning authority prior to the relevant stage of works. This is secured by requirements 12 and 20 of the draft DCO [EN010142/APP/3.1(Rev03)], respectively.</p> <p>Mitigation measures during both construction and decommissioning include stabilising and revegetating exposed areas and soil stockpiles as soon as practicable, appropriate storage of sand and other aggregates in bunded areas being not allowed to dry out, and ensuring vehicles entering and leaving sites are covered to prevent escape of materials during transport. These are based on Institute of Air Quality Management guidance.</p>
RR-038, RR-125	BESS fire fumes	Concerns regarding air pollution caused by a BESS fire.	<p>The Scheme design includes mitigation and protection measures for the management of BESS related incidents or fires, which will be secured through a Framework Battery Safety Management Plan (BSMP) [APP-225], Works Plans [EN010142/APP/2.2(Rev02)] and Outline Design Principles Statement [AS-058]. This includes cooling systems to regulate temperatures to within safe conditions, and safety provisions including fire detections and alarms and thermal barriers to further prevent any accidents.</p> <p>The assessment in Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048] concludes that, in the unlikely event that a fire was to break out in a single cell or module, it is considered very unlikely, given the control measures to be implemented, that the fire would spread to the rest of the BESS. Even in the highly unlikely event that all the systems fail and a large-scale fire were to break out within one of the BESS containers, the resultant hydrogen fluoride concentration at the closest receptors from any emissions of such a fire will be below the level that Public Health England has identified as resulting in notable discomfort to members of the general population. This is due to the minimum offset of 250 m from BESS to properties required within the Outline Design Principles Statement [AS-058], which provides sufficient distance for the pollutants to disperse. The dispersion of hydrogen fluoride concentrations in the unlikely event of a fire has been modelled within Appendix 17-5: Unplanned Atmospheric Emissions from BESS of the Environmental Statement [APP-123].</p>

Climate change

Table 2-7: Applicants Responses to Public Relevant Representations relating to Climate Change

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-189	Weather events caused by Climate Change	Comment that there is no evidence to support claims about more frequent or damaging episodes of extreme weather associated with Climate Change.	<p>Climate change, including extreme weather events, is considered in Chapter 7: Climate Change of the Environmental Statement [APP-038].</p> <p>According to the IPCC 6th edition report (Ref 1-43) <i>"It is an established fact that human-induced greenhouse gas emissions have led to an increased frequency and/or intensity of some weather and climate extremes since pre-industrial time, in particular for temperature extremes"</i>. Please refer to Chapter 11: Weather and Climate Extreme Events in a Changing Climate of the IPCC 6th Assessment Report (Ref 1-43) for more details on the evidence linking anthropogenic climate change with the increase in frequency and severity of extreme weather events.</p>
RR-120, RR-137, RR-282, RR-027, RR-100, RR-143, RR-009, RR-227	Carbon assessment	Concerns relating to the accuracy of the whole-life carbon assessment.	<p>For details on the carbon emissions associated with the Scheme and the expected energy generation, please refer to the GHG impact assessment within section 7.8 of Chapter 7: Climate Change of the Environmental Statement [APP-038]. This assessment considers all potential emissions sources across the lifecycle of the Scheme, including but not limited to, material manufacture and transport during construction, replacement and maintenance of components during operation and any waste disposal resulting from decommissioned components. The whole lifecycle emissions of the Scheme have been assessed using the best available data and current emission factors in accordance with guidance published by the IEMA as described in Section 7.4 of Chapter 7: Climate Change of the Environmental Statement [APP-038]. This methodology is consistent with those accepted by the planning inspectorate for similar Nationally Significant Infrastructure Projects (NSIPs), including Gate Burton Energy Park and Sunnica Energy Farm. All assumptions and limitations of the GHG impact assessment are detailed in Section 7.3 of Chapter 7: Climate Change of the Environmental Statement [APP-038].</p>
Submission ID: 30658	Carbon footprint of solar	Concerns relating to the full impact of the carbon footprint of solar farms, including manufacture, transport and supply chain of solar panels.	<p>The GHG impact assessment in Section 7.3 of Chapter 7: Climate Change of the Environmental Statement [APP-038] details the carbon footprint of the full lifecycle of the solar panels to be used within the Scheme.</p> <p>The transport of components to be used in construction of the Scheme, including manufacturing, is considered within the embodied carbon of the solar panels themselves.</p> <p>Details on the following are detailed within the GHG impact assessment in Section 7.3 of Chapter 7: Climate Change of the Environmental Statement [APP-038]:</p> <ul style="list-style-type: none"> • carbon emissions associated with the transport of solar panels to and within the UK; and • carbon emissions associated with the construction of the solar farm and installation of the solar panels. <p>The carbon emissions associated with the operation of the solar panel manufacturing plant is not within the scope of this assessment beyond the embodied carbon associated with the manufacture of the solar panels themselves. The carbon footprint of the personal equipment required by construction workers is also not within the scope of this assessment as in line with IEMA guidance on assessing GHG emissions.</p>

Cultural Heritage

Table 2-8: Applicants Responses to Public Relevant Representations relating to Cultural Heritage

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-005, RR-271, RR-147, RR-282, RR-227, RR-250, RR-070, RR-061, RR-271	Impacts on the historic environment	Concerns relating to impact on historic rural landscapes and heritage assets and their setting.	<p>The Applicant has undertaken an iterative design process which responds to policy requirements, published historic landscape character assessments and fieldwork analysis, in order to minimise harm to the historic environment. In accordance with the mitigation hierarchy, the Scheme design has been carefully considered to avoid, reduce, or mitigate potentially significant effects on cultural heritage and archaeology assets and historic landscapes, as set out in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and the Design and Access Statement [AS-031]. This has resulted in a Scheme that avoids direct physical impact on any designated heritage assets.</p> <p>Section 8.9 of Chapter 8: Cultural Heritage of the Environmental Statement [APP-039] presents an assessment of the Scheme's effects on heritage assets and historic landscapes. With mitigation embedded within the Scheme design (in the form of buffers and landscaping) and the completion of archaeological evaluation works in accordance with the Archaeological Mitigation Strategy [EN010142/APP/9.5], no significant residual effects have been identified.</p> <p>The historic environment effects and mitigation have been consulted on with statutory stakeholders, including Historic England and LCC, with the discussions recorded in the Statement of Common Ground with Historic England [EN010142/APP/9.18] and Statement of Common Ground with Lincolnshire County Council [EN010142/APP/9.9] submitted at Deadline 1.</p>
RR-024	Impact of vibration	Comment on damage to buildings through vibrations from the development in Springthorpe Conservation area.	As shown on Figure 1 of the Framework CTMP [EN010142/APP/7.11(Rev02)] , no HGV construction traffic would be allowed to pass through the Springthorpe village. As such, there is no potential for vibration to impact on the buildings in the Springthorpe Conservation Area.

Ecology and Biodiversity

Table 2-9: Applicants Responses to Public Relevant Representations relating to Ecology and Biodiversity

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-005, RR-271, RR-147, RR-282, RR-227, RR-250, RR-070, RR-061, RR-271	Impacts on the historic environment	Concerns relating to impact on historic rural landscapes and heritage assets and their setting.	<p>The Applicant has undertaken an iterative design process which responds to policy requirements, published historic landscape character assessments and fieldwork analysis, in order to minimise harm to the historic environment. In accordance with the mitigation hierarchy, the Scheme design has been carefully considered to avoid, reduce, or mitigate potentially significant effects on cultural heritage and archaeology assets and historic landscapes, as set out in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and the Design and Access Statement [AS-031]. This has resulted in a Scheme that avoids direct physical impact on any designated heritage assets.</p> <p>Section 8.9 of Chapter 8: Cultural Heritage of the Environmental Statement [APP-039] presents an assessment of the Scheme's effects on heritage assets and historic landscapes. With mitigation embedded within the Scheme design (in the form of buffers and landscaping) and the completion of archaeological evaluation works in accordance with the Archaeological Mitigation Strategy [EN010142/APP/9.5], no significant residual effects have been identified.</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			The historic environment effects and mitigation have been consulted on with statutory stakeholders, including Historic England and LCC, with the discussions recorded in the Statement of Common Ground with Historic England [EN010142/APP/9.18] and Statement of Common Ground with Lincolnshire County Council [EN010142/APP/9.9] submitted at Deadline 1.
RR-024	Impact of vibration	Comment on damage to buildings through vibrations from the development in Springthorpe Conservation area.	As shown on Figure 1 of the Framework CTMP [EN010142/APP/7.11(Rev02)] , no HGV construction traffic would be allowed to pass through the Springthorpe village. As such, there is no potential for vibration to impact on the buildings in the Springthorpe Conservation Area.
RR-071, RR-282, RR-051, RR-285, RR-039	Impacts of construction on environment	Concern that construction of the cable route will destroy natural habitat / environment	The Cable Route Corridor has been designed in collaboration with the developers of Cottam Solar Project, Gate Burton Energy Park, and West Burton Solar Project, to derive a shared cable corridor in order to minimise impacts through design. Measures to minimise impacts during construction are set out within the Framework CEMP [EN010142/APP/7.8(Rev01)] and Framework CTMP [EN010142/APP/7.11(Rev02)] . The implementation of these plans is secured by the Applicant's draft DCO [EN010142/APP/3.1(Rev03)] . With these measures in place, no significant effects on natural habitat / environment are considered likely.

Flood Risk, Drainage and Water Environment

Table 2-10: Applicants Responses to Public Relevant Representations relating to Flood Risk, Drainage and Water Environment

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-037	Erosion	Concerns over the Scheme causing erosion through water channels	<p>The Scheme has assessed in detail the drainage and run off impacts of the conversion of the Principal Site from arable farmland to solar panels in Chapter 10: Water Environment of the Environmental Statement [APP-041]. Any impacts are managed via Appendix 10-4: Outline Drainage Strategy of the Environmental Statement [APP-098], which sets out the surface water drainage proposals for the Principal Site and has been prepared in accordance with national and local policies.</p> <p>The assessment concludes that there is no likely significant effect from operational site runoff on the water quality of surface water features and groundwater. This is on the basis of the measures included within Appendix 10-4: Outline Drainage Strategy of the Environmental Statement [APP-098] to limit erosion and drainage run off. This includes the proposal to plant the area beneath and surrounding the solar panels with native grasslands and wildflower mixes to slow water runoff and mitigate potential erosion. This planting will intercept and absorb rainfall running off the panels, preventing it from concentrating and potentially forming channels in the ground. To prevent ponding occurring around the panels, a series of boundary (and some routing) swales will be constructed to mimic natural drainage conditions. New access roads will be permeable, in accordance with paragraph 2.10.85 of NPS EN-3 (Ref 1-18).</p> <p>It is also noted that by reverting the current arable land to grassland within the Principal Site, bare soil surfaces following cultivation are no longer left each year. The risk of soil erosion and surface runoff (with the attendant problems to water quality from sediment, nutrient, pesticide and faecal indicator organisms) is greatest where there is no planting cover to shield the soil from rainfall. The Scheme will therefore remove this existing source of soil erosion and runoff.</p>
RR-010, RR-175, RR-199,	Flood risk	Concerns over inability for soils to soak up rainwater as water will run off drip lines directly	A portion of the Principal Site drains to the River Eau, via the Yawthorpe Beck to the north of the Principal Site, with the southern and western extents draining indirectly to the River Till. Appendix 10-4: Outline Drainage Strategy of

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-087, RR-253, RR-025, RR-128		into agricultural drainage ditches and the River Till. Concerns over increasing flooding due to the nature of the development.	<p>the Environmental Statement [APP-098] proposes to mimic the existing natural surface water runoff regime, limiting surface water runoff to greenfield rates, and providing attenuation, where required, for the 1 in 100 year plus 40% climate change event. As explained within the response above, to prevent potential soil erosion in the channels between the solar panels, the Outline Drainage Strategy proposes to plant these areas with native grasslands and wildflower mixes to slow water runoff and mitigate potential erosion. New access roads will be permeable, in accordance with paragraph 2.10.85 of NPS EN-3 (Ref 1-18).</p> <p>Despite the above measures meaning run-off rates are unlikely to increase, attenuation in the form of swales have also been incorporated to control any increase in the rate of flow towards the receiving watercourses. The rate of runoff from each Principal Site location within the Order limits will ensure nil detriment in terms of no increase in runoff rate from the Order limits to the receiving watercourses. With these measures in place, there is no significant effect on the risk of flooding as a result of the Scheme, as evidenced by Appendix 10-3: Flood Risk Assessment of the Environmental Statement [APP-097].</p>
RR-305	Floodplain	Comment on whether development should be taking place within a flood plain.	Appendix 10-3: Flood Risk Assessment of the Environmental Statement [APP-097] has been prepared to assess flood risk to and from the Scheme from all sources. This includes the assessment of development within the floodplain, and includes mitigation requirements, where required, to ensure there is no increase in flood risk, in accordance with national and local planning policy. All permanent above ground infrastructure, other than PV panels, is located outside of floodplain extents (Flood Zone 3 and Flood Zone 2), to ensure no loss of existing floodplain storage. PV panel supports typically occupy less than 1m ³ of floodplain for every 1 ha of land, offering no material loss of floodplain storage.
RR-010, RR-132, RR-172	Surface water	Concerns over surface water and runoff contributing to the wider flooding along the River Witham and within the City of Lincoln.	Appendix 10-4: Outline Drainage Strategy of the Environmental Statement [APP-098] has been prepared in accordance with national and local policies. The Outline Drainage Strategy proposes to mimic the existing natural surface water runoff regime, limiting surface water runoff to greenfield rates, and providing attenuation, where required, for the 1 in 100 year plus 40% climate change event. Attenuation in the form of swales have been incorporated to control any increase in the rate of flow towards the receiving watercourses. The rate of runoff from each Principal Site location within the Order limits will ensure nil detriment in terms of no increase in runoff rate from the Order limits to the receiving watercourses. With these measures in place, there is no significant effect on the risk of flooding as a result of the Scheme, as evidenced by Appendix 10-3: Flood Risk Assessment of the Environmental Statement [APP-097].
RR-038	Leakage and pollutants	Risk of toxic leakage / pollutants into waterways.	<p>Impacts on surface and groundwater quality from site run-off and the potential for accidental spillages during maintenance activities will be controlled through the implementation of detailed CEMP, OEMP and DEMP. These will be substantially in accordance with the Framework CEMP [EN010142/APP/7.8(Rev01)], Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)], respectively, and approved by the relevant local planning authority (/authorities) in accordance with the relevant requirements of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>The chemical pollutant risk from surface water runoff will be low as it will largely comprise of runoff from roofs and panels thereby consisting mainly of rainfall. Although each panel may contain liquid substances that are potentially toxic in the water environment, they are robustly manufactured and unlikely to break. Control measures for the prevention of operational leaks and spillages, including from firefighting water in the unlikely event of fire at a BESS area, are set out within Appendix 10-4: Outline Drainage Strategy of the Environmental Statement [APP-098]. This states that swales will be lined with an impermeable membrane or similar to prevent any pollution associated with fire water runoff from entering the ground. Penstock valves will also be used in the event of a fire to prevent any pollution associated with fire water runoff from entering the local watercourses without prior testing.</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			A detailed drainage strategy will be prepared in substantial accordance with Appendix 10-4: Outline Drainage Strategy of the Environmental Statement [APP-098] as secured by Requirement 10 of the draft DCO [EN010142/APP/3.1(Rev03)] . These measures will ensure that there will be no significant effects arising from the potential contamination of surface water or groundwater.

Human Health

Table 2-11: Applicants Responses to Public Relevant Representations relating to Human Health

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-076, RR-172, RR-125, RR-011, RR-024, RR-044, RR-253, RR-116, RR-038, RR-126, RR-137, RR-294, RR-271, RR-045, RR-282, RR-234, RR-133, RR-175, RR-061, RR-172, RR-218, RR-219, RR-075, RR-069, RR-102, RR-125, RR-052, RR-143, RR-250, RR-315, RR-025, RR-138, RR-320	Mental health and wellbeing	<p>Concerns regarding the impact of the Scheme on the mental health, wellbeing and quality of life.</p> <p>Concerns that residents moved for a better life that will no longer exist.</p> <p>Concerns that the Scheme will exacerbate health problems including stress, anxiety, problems sleeping.</p>	<p>The Applicant recognises that the potential for future environmental changes associated with the Scheme during construction, operation and decommissioning is currently a source of concern for some local residents. To address this concern, the Applicant has undertaken a comprehensive and robust Environmental Impact Assessment (EIA) so that any likely significant effects of the Scheme have been able to be identified and appropriately mitigated or avoided. The results of the EIA are reported within the Environmental Statement. Chapter 11: Human Health of the Environmental Statement [APP-042] assesses potential effects of the Scheme on health and wellbeing of local residents. The assessment takes a holistic approach to health and considers a wide range of health determinants which are relevant to quality of life and amenity. The assessment considers elements of the Scheme which could affect mental health (for example changes in landscape and visual amenity, noise, access to open space and employment) as well as physical health (for example associated with air pollution). No significant adverse effects are identified with regards to human health, as a result of the extensive mitigation proposals included as part of the Scheme. Measures to minimise disturbance are set out within Framework CEMP [EN010142/APP/7.8(Rev01)], Framework OEMP [EN010142/APP/7.9(Rev01)], Framework DEMP [EN010142/APP/7.10(Rev01)], Framework LEMP [EN010142/APP/7.17(Rev02)]. All of these measures are secured through requirements in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] which provide that the detailed management plans must be substantially in accordance with the relevant framework plans. In addition, the Scheme will provide two new permissive paths in accordance with Requirement 15 of draft DCO [EN010142/APP/3.1(Rev03)].</p>
RR-046, RR-218, RR-219, RR-330, RR-268	Impacts on PRow and green space	Concerns regarding the impacts on PRow, walks, green space and impacts to the countryside and how this will impact mental health and quality of life	<p>The Applicant acknowledges that PRow and green space are a valuable community resource due to the access to nature, views and peace which they can offer, and not just due to the access they provide to employment and services. Landscape and visual impacts on users of PRow are assessed within Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043]. Chapter 16: Transport and Access of the Environmental Statement [APP-047] considers impacts on individual PRow as a result of severance, pedestrian delay and non-motorised user amenity, whilst Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] considers impacts on communities as a whole. Chapter 11: Human Health of the Environmental Statement [APP-042] reflects that PRow have physical and mental health benefits by taking into account effects on PRow in terms of both access to open space and active travel (drawing on the conclusions of Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043], Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045], and Chapter 16: Transport and Access of the Environmental Statement [APP-047]).</p> <p>Chapter 11: Human Health of the Environmental Statement [APP-042] concludes that there is a minor adverse (not significant) effect on travel by walking and cycling as a result of the Scheme during construction. During the operational phase there will be a minor beneficial (not significant) effect on walking and cycling due to the provision of new permissive paths through the Principal Site.</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] concludes that there is a negligible (not significant) effect on PRow from the Principal Site as a result of the Scheme during construction. From the Cable Route Corridor, there will be a minor adverse (not significant) effect resulting from severance to access to River Trent for fishers from a temporary closure to BOAT13. Disruption to other PRow receptors resulting from the Cable Corridor is considered to be negligible (not significant) in this phase.</p> <p>In the operational phase, there are no adverse effects on PRow resulting from the Scheme, and there is a minor beneficial (not significant effect) resulting from the additional permissive pathways and PRow introduced as a result of the Scheme.</p> <p>The Framework PRow Management Plan [APP-228] describes how PRow will be managed during construction, operation and decommissioning. Requirement 16 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] requires a detailed PRow Management Plan, which will be required to be substantially in accordance with the Framework PRow Management Plan [APP-228], to be submitted to and approved by the relevant Local Planning Authority (/Authorities) prior to construction.</p> <p>In terms of green infrastructure, the Scheme has been designed to avoid and/or mitigate all significant adverse effects on internationally, nationally and locally designated sites and other important ecological features such as protected species and habitats, ancient and veteran trees, and green infrastructure during the construction, operation and decommissioning phases. This has been achieved through a considered and iterative design that has integrated green and blue infrastructure from the outset, informed by a design team with qualified professional ecologists, which includes embedded avoidance and mitigation measures that are to be secured by the draft DCO [EN010142/APP/3.1(Rev03)]. In addition to protecting existing green infrastructure, the Applicant has also taken opportunities to provide additional mitigation and enhancement measures within the Order limits to improve the quality and quantity and management of the green infrastructure network, by increasing biodiversity and providing overall net gains in habitat. These measures include woodland, scrub and hedgerow planting, encouraging areas to naturally regenerate, establish species rich grassland across the Principal Site, and other habitat restoration and creation within the Order limits. This is outlined in Section 5 of the Planning Statement [AS-029], the Framework LEMP [EN010142/APP/7.17(Rev02)] and the Design and Access Statement [AS-031] and illustrated on the Indicative Landscape Masterplan [AS-028] provided in the latter two documents.</p> <p>Chapter 11: Human Health of the Environmental Statement [APP-042] undertakes an assessment of the Scheme's impacts on community connectivity, access to services, including open space in relation to human health. The likely effect on human health arising from impacts on community connectivity and access to services, including open/green space during the construction phase of the Scheme is assessed to be minor adverse (not significant). During the operation of the Scheme, the effects on community connectivity and access to services including open space is concluded to be negligible.</p> <p>Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] provides an assessment of the effects on open space. During the construction phase, no effects are expected from the Principal Site or the Cable Route Corridor, as no receptors that would experience a significant effect on their amenity during construction.</p> <p>In the operational phase, taking into account the residual effect assessment results of the air quality, noise and vibration, traffic and transport and visual assessments relating to the operational activities, no effects are anticipated on open space from the Principal Site or the Cable Route Corridor. In the decommissioning phase, no effects are anticipated on open space from the Principal Site or the Cable Route Corridor.</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-006	Vibration of equipment	Concerns regarding health impacts of residents caused by low level vibration or noise from equipment	Vibration effects are assessed in Chapter 13: Noise and Vibration of the Environmental Statement [AS-006] . No significant effects on human receptors due to vibration are identified with the implementation of best practicable means to minimise vibration set out within the Framework CEMP [EN010142/APP/7.8(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] . There is no potential for vibration impacts to occur during the operation of the Scheme.

Landscape and Visual Amenity

Table 2-12: Applicants Responses to Public Relevant Representations relating to Landscape and Visual Amenity

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-005, RR-024, RR-011, RR-037, RR-044, RR-184, RR-278, RR-049, RR-079, RR-118, RR-218, RR-219, RR-288, RR-306, RR-330, RR-003, RR-116, RR-038, RR-064, RR-077, RR-084, RR-126, RR-137, RR-300, RR-222, RR-282, RR-223, RR-133, RR-310, RR-175, RR-092, RR-075, RR-270, RR-023, RR-143, RR-314, RR-315, RR-227, RR-217, RR-135, RR-157, RR-199, RR-065, RR-140, RR-190, RR-320, RR-136, RR-081, RR-030, RR-271, RR-147, RR-323, RR-061, RR-131, RR-129, RR-243, RR-255, RR-309, RR-083, RR-099, RR-100, RR-197, RR-087, RR-046, RR-101, RR-268, RR-012, RR-154, RR-239, RR-132, RR-008, RR-096, RR-004, AS0-34,	Visual impacts of the Scheme	<p>Concerns regarding the visual impact of the Scheme, resulting from size and scale.</p> <p>Concerns regarding the impact on the local countryside, loss of rural setting and industrialisation of the area, particularly from important views including communities and PRow.</p>	<p>The Applicant acknowledges that the operation of the Scheme will result in a residual significant adverse effect (at the Year 15 stage, when planting is considered to be sufficiently mature) on Local Landscape Character LLCA 3A Till Vale across the Principal Site and a small number of representative viewpoints that reflect visual and recreational receptors, as presented in Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043]. However, the Applicant has designed the Scheme in consultation with stakeholders to ensure landscape and visual impacts are minimised as far as practicable by proposing a comprehensive landscape and ecological design.</p> <p>With reference to impacts of the rural setting and important views from communities, the Scheme has been subject to design iterations that include increasing the distance of the Order limits from Springthorpe, Sturgate, Hemswell and Harpswell, alongside nearby recreational routes (such as east of Sturgate) that offer amenity value and views of the wider countryside to residents. Furthermore, panels have been removed from fields west of Harpswell and Glentworth and replaced by proposed 'Biodiversity Zones' which will provide increased habitat value relative to the existing farmland.</p> <p>No existing Public Rights of Way (PRow) run through areas proposed for panels. A single bridleway south of Kexby Road is located within the Order limits, but this will be within a proposed 'Biodiversity Zone'. Views of the Scheme will be available from a footpath on Lincoln Cliff southeast of Hemswell, for which significant residual effects have been identified (representative viewpoint 13), but otherwise views from PRow will be largely screened by existing vegetation or very limited through distance.</p> <p>Although elements of the Scheme will limit some open views and at the same time result in localised significant visual effects, the proposed 'Biodiversity Zones', alongside new hedgerows, trees and woodland, will provide green infrastructure and improve habitat connectivity within and around the Principal Site. These, and the set-back from villages and around residential properties, are discussed in the Design and Access Statement [AS-031], in the Framework Landscape and Ecological Management Plan [EN010142/APP/7.17(Rev02)] and illustrated on the Indicative Landscape Masterplan [AS-028].</p>
RR-038, RR-064, RR-126, RR-043, RR-023, RR-077, RR-073, RR-222, RR-199, RR-237, RR-279, RR-202, RR-100, RR-087, RR-116, RR-227	Lincolnshire Cliff and Trent Valley	Concerns over impacts and views to/from Lincolnshire Cliff AGLV and Trent Valley.	<p>Planting and allowing existing hedges to remain and/or grow taller will limit views, although the Applicant accepts that localised significant visual effects will remain in the long term from certain locations along Lincoln Cliff (refer to Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043]).</p> <p>Although there is some historical precedent for more extensive tree and hedgerows along Middle Street, it is also acknowledged that intentional screening of solar infrastructure will limit some locally appreciated views within the Area of Great Landscape Value.</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>NPS EN-1 (Ref 1-17) at paragraph 5.10.13 expressly recognises that all proposed energy infrastructure is likely to have visual effects for many receptors. Any significant landscape and visual effects require weighing in the planning balance against the public benefits of the Scheme and should be considered alongside benefits for green infrastructure that can locally benefit the landscape. These include new native hedgerows along field boundaries; new native woodland and tree belts to link existing habitats; the provision of species-rich native meadows; and the provision of two new permissive paths, to improve north-south recreational access. These measures are set out in the Framework LEMP [APP-EN010142/APP/7.17(Rev-1)] which will inform a detailed LEMP which will be secured by a requirement in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] relating to the preparation and approval of the detailed management plan.</p> <p>An assessment of the planning balance is provided within the Planning Statement [AS-029]. It concludes that, in terms of the overall planning balance, the clear and substantial benefits of the Scheme clearly outweigh any residual adverse effects, including visual effects, which would be localised, short-term, temporary and/or reversible at the end of the Scheme's lifetime.</p>
<p>RR-024, RR-037, RR-044, RR-218, RR-219, RR-288, RR-306, RR-116, RR-096, RR-025, RR-138, RR-140, RR-227, RR-099, RR-271</p>	<p>Visual impact</p>	<p>Visual Impact of Scheme components including fencing, transformers, lighting, CCTV, BESS and colour of solar panels.</p>	<p>The Scheme has sought to avoid proximity to villages and residential properties in line with the provisions of NPS EN-3 (Ref 1-18). Buffers from residential properties of at least 30 m have been incorporated into the Scheme. The Scheme has been designed to limit views from sensitive receptors including residential properties and PRow, although the Applicant accepts that significant effects may remain in the long-term from certain locations along Lincoln Cliff.</p> <p>The fencing used for the Scheme will be of an agricultural nature, comprising timber posts and wire mesh to 2.5m height. Both the fencing and CCTV poles will be placed behind existing and proposed hedgerows to limit visual effects.</p> <p>The Applicant acknowledges that there will be localised views of these elements, alongside the transformers, BESS, Solar Stations and panels. It is considered that hedges, when mature and/or managed at a height of 2 to 3m, will be sufficient to screen the panels in the majority of views from lower-level locations. The transformers (as part of the substations) have been located close to existing mature tree screening, where possible. The detailed design will seek to further avoid or reduce visibility of elements and the final level of impacts.</p> <p>During operation, permanent security lights with motion detectors will be used for security purposes around the electrical infrastructure, emergency access points to facilities within the Scheme and potentially at other sites of critical infrastructure. No areas are proposed to be permanently lit. During overnight maintenance personnel will use portable lighting sources. Closed CCTV systems would be internal facing around the perimeter of the operational areas of the Principal Site, so would not face outside of the Scheme boundary, and lighting disturbances will be sufficiently controlled resulting in no impact on the integrity or function to any ecological sites. These measures are described in Chapter 3: Scheme Description of the Environmental Statement [AS-053], as well as the Framework LEMP [APP-EN010142/APP/7.17(Rev02)], Framework CEMP [EN010142/APP/7.8(Rev01)], Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)]. These documents will inform detailed LEMP, CEMP, OEMP and DEMP, respectively, as secured by requirements in Schedule 2 of the Draft Development Consent Order [EN010142/APP/3.1(Rev03)] relating to the preparation and approval of the detailed management plans.</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-133, RR-138, RR-175, RR-043, RR-282, RR-025	Screening	Concerns surrounding insufficient screening of the Scheme.	<p>The Applicant has developed the Scheme to ensure landscape and visual impacts are minimised as far as practicable, particularly through the use of both existing and proposed new hedgerows and trees as part of a comprehensive landscape and ecological design.</p> <p>Details of the proposed screening and buffers including existing vegetation to be retained and proposed planting are provided in the Framework LEMP [EN010142/APP/7.17(Rev02)] and the Design and Access Statement [AS-031].</p> <p>Further information is provided in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035], Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043] the Design and Access Statement [AS-031] and the Outline Design Principles Statement [AS-058].</p> <p>The Applicant acknowledges that it is sometimes challenging to balance intentional screening of the Scheme against loss of locally important views, such as to and from the Cliff. Screening in such cases may not always be appropriate and the localised significant residual visual effects will arise.</p> <p>For lower-lying areas below the Cliff, the extensive use of new hedgerow and tree planting along roads that run through and adjacent to the Principal Site will reduce views, such that no significant visual effects have been identified at the Year 15 stage when planting is considered to be sufficiently established.</p>
RR-270, RR-116	Proximity to residential properties	Comments note that solar panels are in too close proximity to residential properties.	<p>The Scheme has sought to avoid proximity to villages and residential properties in line with the provisions of NPS EN-3 (Ref 1-18). Buffers from residential properties of at least 30 m have been incorporated into the Scheme and the landscape design has sought to minimise any potential impacts on residential amenity as a result of the Scheme. More extensive buffers have been used within key views from residential properties. Further information is provided in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035], Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043] the Design and Access Statement [AS-031] and the Outline Design Principles Statement [AS-058].</p>
RR-271	Independent Landscape Quality Assessment	Comment that great weight should be given to recommendations of independent Landscape Quality Assessment.	<p>The Applicant's assessment of landscape and visual effects is presented within Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043]. The Applicant considers the assessment to be robust, as it has been undertaken with industry standard guidance and legislative requirements, including a methodology agreed with the LPA. This includes reference to the Landscape Institute Technical Guidance Note TGN 02-21 'Assessing Landscape Value Outside National Designations' (Ref 1-45) and the provision of a baseline landscape character assessment specific to the Scheme.</p> <p>The Applicant acknowledges that the operation of the Scheme will result in a residual significant adverse effect (at the Year 15 stage, when planting is considered to be sufficiently mature) on Local Landscape Character LLCA 3A Till Vale across the Principal Site and a small number of representative viewpoints that reflect visual and recreational receptors. However, the Applicant has designed the Scheme in consultation with stakeholders to ensure landscape and visual impacts are minimised as far as practicable by proposing a comprehensive landscape and ecological design.</p> <p>NPS-EN-1 (Ref 1-17) at paragraph 5.10.13 expressly recognises that all proposed energy infrastructure is likely to have visual effects for receptors. Any significant landscape and visual effects require weighing in the planning balance and should be considered alongside benefits for green infrastructure such as new and enhanced planting/ecological areas that can locally benefit the landscape.</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			An assessment of the planning balance is provided within Planning Statement [AS-029] . It concludes that in terms of the overall planning balance, the clear and substantial benefits of the Scheme clearly outweigh any residual adverse effects, which would be localised, short-term, temporary and/or reversible at the end of the Scheme's lifetime.
RR-270, RR-081	Impact of construction on amenity	Comments note that construction period would impact on residential amenity.	<p>The Applicant acknowledges that there may be adverse impacts on residential amenity as a result of the construction phase of the Scheme, which may be a source of concern for local residents. The Secretary of State will need to balance those impacts and changes against the urgent need and critical national priority for the Scheme as set out in Government policy. Although the Applicant acknowledges that there will be some adverse impacts arising from the Scheme, the Applicant has sought to avoid, mitigate and minimise these impacts as much as possible, and has prepared a number of management plans that will ensure that impacts are kept to a minimum.</p> <p>Chapter 14: Socioeconomics and Land Use of the Environmental Statement [APP-045] considers impacts on residential amenity. This includes considering effects from Chapter 6: Air Quality of the Environmental Statement [APP-037], Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043], Chapter 13: Noise and Vibration of the Environmental Statement [AS-006], and Chapter 16: Transport and Access of the Environmental Statement [APP-047]. Taking into account the mitigation measures embedded within the Scheme in the form of landscaping proposals, buffer areas and management plans (such as Framework CEMP [EN010142/APP/7.8(Rev01)], Framework CTMP [EN010142/APP/7.11(Rev02)], Framework LEMP [EN010142/APP/7.17(Rev02)], Framework OEMP [EN010142/APP/7.9(Rev01)], and Framework DEMP [EN010142/APP/7.10(Rev01)]), no significant effects on residential amenity have been identified. The implementation of these plans is secured by the Applicant's draft DCO [EN010142/APP/3.1(Rev03)].</p>

Noise and Vibration – General Comments

Table 2-13: Applicants Responses to Public Relevant Representations relating to Noise and Vibration – General Comments

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-026, RR-272, RR-116, RR-137, RR-222, RR-043, RR-061, RR-115, RR-140, RR-227	Noise impacts	General concerns relating to noise	<p>Noise and vibration during the construction and decommissioning phases and noise during the operational phase have been assessed in Chapter 13: Noise and Vibration of the Environmental Statement [AS-006]. There is no potential for effects from vibration during operation, due to the nature of the Scheme. The assessment concluded no significant residual noise and vibration effects as a result of either the construction or operation of the Scheme after the implementation of mitigation measures.</p> <p>Mitigation measures have been embedded into the Scheme design and management plans to minimise adverse effects where practicable, as set out in Section 13.7 of Chapter 13: Noise and Vibration of the Environmental Statement [AS-006], as well as the Framework CEMP [EN010142/APP/7.8(Rev01)], the Framework OEMP [EN010142/APP/7.9(Rev01)], and Framework DEMP [EN010142/APP/7.10(Rev01)]. Detailed management plans will need to be approved post consent prior to the relevant phase of works by the relevant local authorities. These detailed management plans must substantially accord with the framework management plans and this is secured by the relevant requirements in Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)]. These measures include embedded design measures representing Best Practicable Means (BPM) during construction and decommissioning, and the consideration of plant selection, layout of the Order limits, including locating and orienting noise generating infrastructure such as the transformers forming part of substations, Solar Stations and BESS in a sensitive manner to minimise operational noise at sensitive receptors. In addition, the Applicant is specifically committing to noise related design principles including no noise generating equipment within 250 m from residential receptors as set out in the</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			Outline Design Principles Statement [AS-058] which will inform the detailed design, as secured by Requirement 5 of the draft DCO [EN010142/APP/3.1(Rev03)] .
RR-024, RR-006, RR-140	Humming	Concerns relating to humming of solar infrastructure	<p>The assessment of operational noise set out in Chapter 13: Noise and Vibration of the Environmental Statement [AS-006] does not identify any significant noise effects. However, low frequency noise may be generated from the two onsite substations and may be perceptible at nearby properties to those substations. Paragraph 13.7.17 of Chapter 13 Noise and Vibration [AS-006] states that:</p> <p><i>“The issue of low frequency noise will be considered throughout the detailed design for the on-site substations and eliminated through design, or appropriately mitigated (isolation and attenuation measures) where appropriate”.</i></p> <p>This commitment is secured by the measures included within the Framework OEMP [EN010142/APP/7.9(Rev01)]. A detailed OEMP is to be produced in substantial accordance with the Framework OEMP [EN010142/APP/7.9(Rev01)], as set out within Requirement 13 of Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)]. Furthermore, Requirement 17 of Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)] sets out the requirement for an operational noise assessment to be undertaken prior to the works on the solar panels, BESS and substations starting, to ensure that the operational noise rating levels do not exceed those set out within Chapter 13: Noise and Vibration of the Environmental Statement [AS-006].</p>
RR-038	Noise from panel repair	Concerns relating to noise caused by repair works to solar panels	Any repair works required to solar panels would result in noise levels that would be no greater than those identified in the construction noise assessment in Chapter 13: Noise and Vibration of the Environmental Statement [AS-006] . No significant construction noise effects are identified. As such, there may be isolated periods of temporary repair work that generate noise affecting sensitive receptors; however, the level of noise would not be significant.

RR-014 – Specific Comments (primarily relating to Noise and Vibration)

Table 2-14: Applicants Responses to RR-014 – Specific Comments (primarily relating to Noise and Vibration)

RR Ref. No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-014	Cumulative effect and food production	This proposed development is totally ill-suited to this area and should be rejected. We are already under threat of numerous other solar developments in this small region of Lincolnshire which will have the cumulative effect of removing over 10,000 acres of productive farmland from food production.	<p>The location and design of the Scheme is the result of a comprehensive site selection process that was led by environmental and planning considerations to avoid and minimise impacts as early as possible. Following this, the Scheme has undergone an iterative design process which has resulted in the delivery of a functional and efficient Scheme design. This design will deliver a large amount of renewable and low carbon electricity using solar PV arrays, whilst also being sensitive to the local context and surrounding area within which it is located, avoiding and minimising impacts on the environment as far as practicable.</p> <p>The Applicant has set out its rationale for selecting the Principal Site and Cable Route Corridor in Chapter 4: Alternatives and Design Evolution within the Environmental Statement [APP-035]. This explains the stages and the main considerations which have influenced the Applicant in how it has selected the land for the Scheme. For the Principal Site this has included seeking to avoid environmental and land use constraints and taking into consideration other criteria such as network connection; topography; field pattern and arrangement; land use conflict, as well as land availability.</p> <p>Agricultural land quality was a key consideration in the Applicant's site selection process as set out in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and the Design and Access Statement [AS-031].</p>

RR Ref. No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into account reductions to the Order limits following the Applicant's Change Request (granted on 24 October 2024), for the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is provided within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p> <p>As set out in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. All other infrastructure will be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a Decommissioning Environmental Management Plan (DEMP). In accordance with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)] submitted as part of the Application. The only potential permanent removal of land from agricultural use may result from proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However, the potential change of use of 0.07% of agricultural land that is BMV land to proposed woodland is not considered to be significant and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60-year operational period has the potential to accrue improvement to soil function over a large area. Whilst not food production, woodland presents benefits provided by the Scheme in terms of biodiversity and provides future opportunities for farm diversification.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 of Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire. Land can continue in agricultural production through the operational phase and that following operation, the land used for the Scheme can revert back to current agricultural management.</p> <p>Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] assesses the loss of agricultural land in combination with all cumulative solar schemes (Gate Burton Energy Park, West Burton Solar Project and the Cottam Solar Project and others set out in Table 18-22 in Chapter 18 of the Environmental Statement [APP-049]). This confirms that in combination with all cumulative solar developments that there is still not a significant effect on agricultural production as a result of the schemes. The area of agricultural land that would be temporarily taken out agricultural use across all four schemes would be 2.2% of agricultural land in Lincolnshire.</p> <p>The Applicant has also prepared a report setting out the cumulative effects of solar projects on BMV land within Lincolnshire, which is attached as Appendix B of this document. This report further concludes that the potential permanent loss of BMV land in Lincolnshire as a result of solar DCO projects would be 0.8% and would be 0.27% as a result of ground mounted solar TCPA projects. This amounts to only 0.9% of all BMV land within Lincolnshire permanently lost to solar projects within Lincolnshire.</p>

RR Ref. No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>The Secretary of State in his recent decisions for Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] recognised the local concerns on the loss of productive agricultural land but concluded that, on a cumulative basis alongside the other solar projects (including the Tillbridge Solar Project), that the cumulative assessments forming part of each application have suitably considered cumulative effects. The Secretary of State at paragraph 4.178 of the Gate Burton Energy Park decision states that the <i>“cumulative loss of BMV land in Lincolnshire due to NSIP solar projects amounts to 0.83% of the total BMV land with a further 0.21% loss to TCPA solar projects. The Secretary of State considers that this is only around 1% of the total BMV land in Lincolnshire, further noting that the land will be lost for a temporary, albeit long-term period and that the land can be returned upon decommissioning of development to its original state. The Secretary of State places great importance on BMV land but is satisfied that the siting of the Proposed Development on BMV land has been justified.”</i></p> <p>The Tillbridge Solar Project, through its site selection process sought to minimise impacts upon BMV land and through design iteration of the Scheme, has further minimised impacts. The siting of the Scheme on BMV land is justified and the loss of agricultural land and therefore potential food production would be temporary and reversible allowing the Principal Site to be brought back into agricultural use following decommissioning.</p> <p>In the recent Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] decisions, the Secretary of State (SoS), determined that the cumulative loss of BMV land across these two schemes, together with West Burton and the Tillbridge Solar Project, and therefore the potential impact upon agricultural land and food production, will be minor and would not impact food security when these four solar NSIPs are considered both individually and cumulatively. The SoS agreed with the ExA's recommendations on agricultural land use in considering the Gate Burton Energy Park. The ExA confirmed in its recommendation report at paragraph 3.11.114 that:</p> <p><i>“Whilst I appreciate the concerns of many IPs and the concerns expressed there is no meaningful assessment of the extent of lost production. Furthermore, given the national and regional figures identified by the Applicant in respect of cereal production even taking account of the whole site area there would be little discernible effect. This would be true even in a cumulative scenario on the basis of the figures produced by the Applicant.”</i></p>
RR-014	Visual effects	This level of industrialisation will totally change this rural area and its communities for decades to come.	<p>The Applicant acknowledges that the operation of the Scheme will result in a residual significant adverse effect (at the Year 15 stage, when planting is considered to be sufficiently mature) on Local Landscape Character LLCA 3A Till Vale across the Principal Site and a small number of representative viewpoints that reflect visual and recreational receptors, as presented in Chapter 12: Landscape and Visual Amenity Assessment of the Environmental Statement [APP-043]. However, the Applicant has designed the Scheme in consultation with stakeholders to ensure landscape and visual impacts are minimised as far as practicable by proposing a comprehensive landscape and ecological design, which includes extensive new hedgerows, trees, woodland and species-rich meadows that will provide green infrastructure and improve habitat connectivity within and around the Principal Site. This is described in section 5.2 of the Design and Access Statement [AS-031], in the Framework Landscape and Ecological Management Plan [EN010142/APP/7.17(Rev02)] and illustrated on the Indicative Landscape Masterplan [AS-064].</p>
RR-014	Decentralised solar	Solar panels should be placed on brownfield sites and rooftops not in working fields and next door to peoples' houses.	<p>The Government has identified through its energy policy, most recently in the NPS EN-1 (Ref 1-17) and NPS EN-3 (Ref 1-18), that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p>

RR Ref. No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-014	Environmental effects	This will have a disastrous impact on people's' lives, the local economy, ecology, wildlife and mental health.	<p>In accordance with NPS EN-1 (Ref 1-17) paragraph 5.11.3 and NPS EN-3 (Ref 1-18) paragraph 3.10.14 the Applicant considered the availability of brownfield land within range of the point of connection. The brownfield land that was identified was less than 5ha in size or already allocated for other uses within the adopted or emerging local plan at the time of the search. Therefore, it was concluded that there was insufficient, suitable brownfield land for the Scheme.</p> <p>As discussed in the Statement of Need [APP-210], the Applicant recognises that decentralised energy generation on roof tops has an important role to play in decarbonisation, however on its own, smaller scale solar, including rooftop solar, is not likely to deliver a sufficient total capacity at the required pace and at an affordable cost to meet the Government's targets. Whilst rooftop solar is likely to contribute to decarbonisation, large-scale solar is still an essential part of the future electricity system, that must be deployed where there is the natural resource, where land is available and suitable, and in proximity to available grid connection locations, such as the area local to the Scheme.</p> <p>The Applicant recognises that the potential for future environmental changes associated with the Scheme during construction, operation and decommissioning may be a source of concern for local residents. The Applicant has undertaken a comprehensive and robust Environmental Impact Assessment so that any likely significant effects of the Scheme can be identified and mitigated as far as practicable.</p> <p>In terms of the local economy, as set out in paragraph 14.8.13 and 14.8.23 of Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045], the construction of the Scheme includes the provision of 138 jobs in the local area, equating to £7.9 million Gross Value Added (GVA) generated within West Lindsey and Bassetlaw districts, and £44.4 million within the East Midlands as a whole. Chapter 11: Human Health of the Environmental Statement [APP-042] concludes that the jobs arising from the construction phase of the Scheme will result in a beneficial effect on human health in the local area because good quality work protects against social exclusion through the provision of income, social interaction, identity and purpose which the Scheme will help to deliver through its construction phase.</p> <p>In terms of ecology and wildlife, Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040] concludes that there will be no significant adverse effects on biodiversity, with significant beneficial effects to a variety of habitats as a result of the landscape proposals introduced by the Scheme, including broad-leaved woodland, running water, hedgerows and species, including breeding birds, particularly farmland birds associated with hedgerows and field margins. As set out in the Biodiversity Net Gain Report [AS-062], the Scheme is predicted to deliver a net gain of 64.44% for area-based habitat units, 17.28% for hedgerow units, and 22.94% for watercourse units. The Applicant has committed to achieving a minimum level of BNG through the Scheme, as secured by both requirements 7 (landscape and ecological management plan) and 8 (biodiversity net gain) of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. Requirement 8 provides that construction cannot commence until a BNG strategy has been submitted and approved by the relevant planning authority, in consultation with the relevant statutory nature conservation body (being Natural England). The BNG strategy must be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)], which states at paragraph 4.6.2 that the Applicant is committed to achieving a minimum of 10% BNG, in accordance with the terms of the Biodiversity Net Gain Report [AS-062].</p> <p>Section 11.8 of Chapter 11: Human Health of the Environmental Statement [APP-042] assesses potential effects of the Scheme on health and wellbeing of local residents. The assessment takes a holistic approach to health and considers a wide range of health determinants which are relevant to quality of life and amenity. The assessment considers elements of the Scheme which could affect mental health (for example changes in landscape and visual</p>

RR Ref. No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-014	Capacity of the Scheme	<p>All for an intermittent, limited power source which doesn't operate at night and when the sun doesn't shine and relies on the importation of components from across the world at a huge cost to the carbon footprint. The development is predicated upon the proposal that it will produce large amounts of low carbon electricity. This is a myth. Components will be imported from thousands of miles away and the large amount of farmland taken by solar panels and their infrastructure will be disproportionate to the small amounts of potential electricity generated.</p>	<p>amenity, noise, access to open space and employment) as well as physical health (for example associated with air pollution). No significant adverse effects are identified with regards to human health.</p> <p>The location and design of the Scheme is the result of a comprehensive site selection process that was led by environmental and planning considerations to avoid and minimise impacts as early as possible. Following this, the Scheme has undergone an iterative design process which has resulted in the delivery of a functional and efficient Scheme design. This design will deliver a large amount of renewable and low carbon electricity using solar PV arrays, whilst also being sensitive to the local context and surrounding area within which it is located, avoiding and minimising impacts on the environment as far as practicable.</p> <p>Design objectives were developed at an early stage and have guided the Scheme's design response to the local context to develop a good design that balances the need to maximise renewable energy generation from the Scheme, whilst minimising potential adverse impacts and providing mitigation and enhancement measures where practicable, as set out in section 3.10 of the Design and Access Statement [AS-031].</p> <p>This has resulted in a Scheme which, with the implementation of mitigation, avoids residual significant adverse effects in relation to biodiversity sites; protected species or habitats; agricultural land; heritage assets; flood risk; water quality; access. Impacts on the local area have therefore been minimised as far as practicable.</p> <p>While solar power is indeed intermittent, it is important to note that advancements in energy storage systems are effectively addressing these challenges. By storing excess energy generated during sunny periods, battery energy storage systems (BESS) can continue to provide a stable and reliable power supply even when the sun is not shining.</p> <p>Carbon emissions incurred during the manufacturing and transportation phases are offset over the operational lifespan of the solar panels. Once installed, solar panels generate electricity with zero direct emissions, significantly reducing the overall carbon footprint compared to fossil fuel-based energy sources playing a crucial role in the transition to a low-carbon grid. As described in Section 7.8 of Chapter 7: Climate Change of the Environmental Statement [APP-038], when considering whole-life carbon emissions the Scheme will generate 15 million tCO_{2e} less GHG emissions, compared to the equivalent amount of energy generated by a fossil fuelled Combined Cycle Gas Turbine (CCGT).</p> <p>As the UK moves towards net-zero 2050, it is important that the electrical grid is supported by both variable generation sources (e.g. solar/wind) and dispatchable generation sources (e.g. gas fired turbines with carbon capture and storage technology). In the Government report on decarbonising the electricity sector (Business, Energy and Industrial Strategy Committee, 2023 (Ref 1-38)), a total of 70 GW of solar energy capacity is targeted by 2035 (the UK is currently at 16 GW), a proportion of which is intended to be supplied by the Scheme.</p> <p>The carbon impact of the transport and manufacturing of all materials used in the construction and operation of the Scheme has been considered within Section 7.8 of Chapter 7: Climate Change of the Environmental Statement [APP-038], with the whole-life carbon emissions generated by the Scheme considered to be approximately 3,377,116 tCO_{2e}. An estimate of overall electricity generation expected to be produced over the lifetime of the Scheme has also been provided (48.5 TWh). This results in an overall carbon intensity of the energy produced by the Scheme of 70 gCO_{2e}/kWh (worst-case scenario). This is 80% less than the carbon intensity of energy produced by the most efficient fossil fuelled energy generation technology (CCGT), which typically produces energy at a carbon intensity of around 354 gCO_{2e}/kWh.</p>

RR Ref. No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-014	Adequacy of consultation	<p>I believe that the proposed Tillbridge development has not adequately addressed the concerns of local residents who will be affected hugely by these proposals. There has been little demonstration of change to the proposals in response to local feedback during the local consultation processes.</p>	<p>The Applicant has complied with the Planning Act 2008 (PA 2008) (and other relevant statutory requirements) in carrying out Statutory Consultation, ensuring that local residents had an opportunity to comment on the Scheme. The Applicant has also consistently engaged with the community and relevant authorities throughout the consultation process as well as informally outside of consultation periods.</p> <p>The Applicant has carefully considered those comments during the Scheme's development before the Application for development consent in accordance with the obligations outlined under Section 49 of the PA 2008. A summary of comments received, and changes made as a result of comments received, are presented in the Consultation Report [APP-021]. As a result, the Applicant has made several design modifications across the Scheme to address residents' specific concerns and to minimise any adverse effects on daily life, while also considering the Scheme's positive impact on the ecosystem and climate.</p> <p>The Planning Inspectorate has considered the adequacy of the Applicant's consultation when deciding whether to accept the Application for examination. The Planning Inspectorate has confirmed that the Applicant has consulted adequately, by accepting the Application.</p>
RR-014	Noise and mental health	<p>I believe that the developer has not done enough to mitigate public risk with potentially health-risking infrastructure being placed so close to properties. As the resident of a house lying within 10 metres of the boundary of the proposed development and only 510 metres away from one of the two proposed substations, I am extremely concerned about noise emissions, health issues relating to living this close to an industrialised development, effects upon local infrastructure, roads, disruption whilst building and during operation and the importation of a large labour force to construct and service its operation. My daughter who is (redacted) with (redacted) is extremely adversely sensitive to certain types of noises - particularly the type of constant low hum that the solar infrastructure will produce. Adverse noises lead to her experiencing high levels of anxiety and stress. We have retained the services of an acoustician who advises us that Tillbridge have significantly underestimated the noise impact of the development in their modelled data and it will be significantly greater than they suggest</p>	<p>The Applicant was first made aware of the concerns set out in RR-014 in respect of the potential noise impacts of the Scheme in July 2023. The Applicant has sought to engage with this IP and address their concerns through updates to the Scheme design and additional assessment since that time. The Applicant remains committed to addressing these concerns.</p> <p>Following these concerns being raised, the Applicant has amended the Indicative Principal Site design and associated Application documents to ensure that the nearest BESS and Solar Stations (which contribute to the noise profile of the operational Scheme) are now placed at a greater distance from the property in question. The closest Solar Station and BESS areas were initially located approximately 550m from the nearest part of the property boundary identified in RR-014 in Fields 92 and 93. Subsequently, the Solar Station and BESS in Field 92 was moved west to Field 88, so the distance to the property is now approximately 770 m from the nearest part of the property boundary. The Solar Station and BESS in Field 93 was moved west to the boundary of Field 77, so the distance to the property is approximately 950 m from the nearest part of the property boundary. This is reflected in the Application and is illustrated on Figure 3-1: Indicative Principal Site Layout Plan of the Environmental Statement [AS-055].</p> <p>Landscape proposals have also been developed in greater detail to include both open grassland and belts of woodland within the fields immediately to the west and northwest, the latter to provide visual screening of any noise-generating operational plant from the property. These proposals are illustrated on Figure 3-1: Indicative Principal Site Layout Plan of the Environmental Statement [AS-055] which will be substantially in accordance with the Framework LEMP [EN010142/APP/7.17(Rev02)] and secured by Requirements 7 and 8 of the draft DCO [EN010142/APP/3.1(Rev03)] Furthermore, the Change Request (granted by the ExA on 24 October 2024) proposes to remove Northlands Road from the Order limits shown in Figure 3-1: Indicative Principal Site Layout Plan of the Environmental Statement [AS-055] to confirm that no construction, operational or decommissioning traffic would use a route near to the property.</p> <p>The Environmental Statement presents the results of a reasonable worst-case modelling exercise which indicates that there would not be a significant noise effect from the Scheme on this property.</p> <p>However, the Applicant acknowledges the specific sensitivity to noise of the residents of the property and the concern that low frequency noise from the substation may be perceptible. Paragraph 13.7.17 of Chapter 13: Noise and Vibration of the Environmental Statement [AS-006] states that:</p>

RR Ref. No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
		<p>at our location. He advises us that this will be noticeable at our house day and night, will be constant and will be inescapable when outdoors. Tillbridge are aware of our specific concerns since last year. An examination of the Tillbridge indicative masterplan published in March 2024 shows that they have not in fact made any specific concessions in response to our concerns despite suggesting this. We moved here 24 years ago for my daughter's well-being so she could live in a quiet, peaceful environment and this will now be taken away from her if this development goes ahead. Therefore, for both personal and local reasons, this proposed development is entirely inappropriate for this area which has always been a traditional rural, village based community. People need the countryside and the quality of life that it offers and it shouldn't be sacrificed when other options (such as brownfield sites) are available but haven't been explored. I urge that this development should be rejected for all these reasons.</p>	<p><i>"The issue of low frequency noise will be considered throughout the detailed design for the on-site substations and eliminated through design, or appropriately mitigated (isolation and attenuation measures) where appropriate".</i></p> <p>This commitment is secured by the measures included within the Framework OEMP [EN010142/APP/7.9(Rev01)]. A detailed OEMP is to be produced in substantial accordance with the Framework OEMP [EN010142/APP/7.9(Rev01)], as set out within Requirement 13 of Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)]. Furthermore, Requirement 17 of Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)] sets out the requirement for an operational noise assessment to be undertaken prior to the works on the solar panels, BESS and substations starting, to ensure that the operational noise rating levels do not exceed those set out within Chapter 13: Noise and Vibration of the Environmental Statement [AS-006].</p> <p>In addition, the Applicant has had meetings with the noise consultant acting for the residents on 24 January 2024, 21 June 2024 and 8 October 2024. As part of the conversations with the noise consultant acting for the residents, the Applicant's noise consultant produced an 'Acoustics Technical Note' in May 2024 relating to the noise levels at the property resulting from the operation of the new infrastructure associated with the Scheme. The noise modelling reported in the technical note demonstrates that siting the BESS and Solar Stations further away from the property, as described above, would lead to lower predicted noise levels at the property compared to alternative scenarios. As such the Applicant has changed its proposed site layout by making a commitment in the DCO to avoid BESS and Solar Stations within the field closest to the property (Field 92) and by making a commitment that operational noise does not to exceed the results reported within Chapter 13: Noise and Vibration of the Environmental Statement [AS-006]. This is shown in Figure 3-1: Indicative Principal Site Layout Plan of the Environmental Statement [AS-055] and secured through the Works Plans [EN010142/APP/2.3(Rev02)], which explicitly exclude the provision of Solar Stations and BESS on Field 92, and by requirement 17 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] which requires for compliance with an operational noise rating levels set out within the Environmental Statement.</p> <p>In July 2024, the Applicant also produced a non-technical 'Report on the Development Consent Order Process' to support and assist discussions with the property owners to explain how the mitigation and control measures would be secured to ensure that the Scheme does not result in significant effects with respect to noise.</p> <p>The Applicant has appended both the Acoustics Technical Note (Appendix C) and the Report on the Development Consent Order Process(Appendix D) to this response document.</p> <p>In summary, the following mitigation is included within the Application which will minimise noise effects at the property:</p> <ul style="list-style-type: none"> • Table 3-8 of the Framework OEMP [EN010142/APP/7.9(Rev01)] includes the below measures to minimise operational noise. In accordance with Requirement 13 of the draft DCO [EN010142/APP/3.1(Rev03)], a detailed operational management plan will be prepared prior to operation; this must be substantially in accordance with the Framework OEMP. <ul style="list-style-type: none"> ○ The specification of plant machinery with low noise emission and properly attenuated supply and extract terminations will help to minimise noise emissions during the operational phase. The use of enclosures, local screening, mufflers, and silencers will also be used where practicable having regard to noise levels at this location. Plant such as the substation and batteries will be designed to have minimal tonal, impulsive or intermittent features.

RR Ref. No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<ul style="list-style-type: none"> ○ The Solar Stations and substations, inverters, transformers and cooling fans will be located and orientated in areas away from large concentrations of receptors such that operational noise emissions from electrical equipment are less impactful. There is a commitment to locate Solar and BESS Stations at least 250 m from residential properties. In the case of this property there will not be a Solar or BESS station within 500 m. ○ The Applicant commits that noise at sensitive receptors will be no higher than the levels presented in Section 13.8 of Chapter 13: Noise and Vibration of the Environmental Statement [AS-006]. The level presented at this property is within the range of hourly background sound levels measured in the vicinity. As such typical background sound levels would not be expected to noticeably increase with the Scheme operational. ● The Outline Design Principles Statement [AS-058] states that ‘to avoid adverse noise effects on residential properties in close proximity to the Scheme, solar stations and BESS will not be located within 250m of a residential property’. The detailed design of the Scheme must be in accordance with this design principle, as secured by requirement 5 of the draft DCO [EN010142/APP/3.1(Rev03)]. ● The Works Plans [EN010142/APP/2.3(Rev02)] exclude the provision of Solar Stations and BESS on Field 92 to further reduce noise impacts on this property. This means that the substation as well as all BESS and Solar Stations will be at least 500 m from this property. ● Finally, the following requirement is included within Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]: <i>“Operational noise 17.— (1) No part of Work No. 1, Work No. 2 or Work No. 3 may commence until an operational noise assessment containing details of how the design of the authorised development has incorporated mitigation to ensure the operational noise rating levels as set out in the environmental statement are to be complied with for that part has been submitted to and approved by the relevant planning authority for that part. (2) The mitigation measures described in the operational noise assessment for each part of the authorised development must be implemented as approved.”</i> <p>The Applicant is looking to progress a Statement of Common Ground with the resident of the property identified in RR-014 to narrow down areas of disagreement with regard to the noise assessment.</p>
RR-215	Noise and mental health	My wife will send you detailed comments, which I will not repeat here. But in summary, we have severely (redacted) daughter who is unable to tolerate changes to her environment, particularly noise levels. Her professional support team (psychiatrist and social worker) have attested to this. We have retained the services of a professional acoustics expert who has concluded that the noise levels modelled in the Tillbridge application are significantly underestimated.	<p>The Applicant notes this comment. The detailed comments raised have been responded to above in response to these comments. The Applicant disagrees that the noise levels modelled have been underestimated. The operational noise levels reported in the Section 13.8 of Chapter 13: Noise and Vibration of the Environmental Statement [AS-006] have been based on a series of reasonable worst-case assumptions such as conservative sound power levels, no plant enclosures and continuous operation of the plant throughout the day and night.</p> <p>The Applicant is looking to progress a Statement of Common Ground with the resident of the property identified in RR-014 to narrow down areas of disagreement with regard to the noise assessment.</p>

RR Ref. No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-215	Adequacy of consultation	Tillbridge has ignored these concerns, notwithstanding meeting with us. We are gravely concerned that when the scheme progresses it will no longer be possible for our daughter to continue living here.	The Applicant has considered the concerns thoroughly and has discussed these with the residents and also separately with their noise consultant, and provided additional mitigation within the Scheme to address these, as set out above in response to these comments.
RR-215	Mental health and agricultural land	I will not repeat the other general concerns that the scheme will have an adverse effect on health and mental wellbeing, together with the loss of agricultural land etc.	The Applicant notes this comment and has responded to these points above in response to the comments set out in RR-014.

Socio Economics and Land Use

Table 2-15: Applicants Responses to Public Relevant Representations relating to Socio Economics and Land Use

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-011, RR-091, RR-312, RR-105, RR-006, RR-074, RR-267, RR-100, RR-199, RR-025, RR-138, RR-043	Loss of agricultural jobs	Concerns that the loss of farmland will result in a loss of jobs within the area.	<p>As set out in paragraph 14.8.50 to 14.8.52 Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045], in the operational phase, an estimated 11 net additional jobs will be created by the Scheme, and the Principal Site currently supports 10 jobs through agricultural activities. The total net employment effect is 0 jobs in the operational phase as a result.</p> <p>In the construction and decommissioning phases, the impact of employment generation on the local economy has been assessed to be a minor beneficial (not significant) effect at the local scale.</p> <p>The Applicant's position is that the Framework Skills, Supply Chain and Employment Plan (SSCEP) [APP-232] would, once implemented in full post-consent, deliver additional positive economic outcomes. This includes the Applicant seeking to maximise opportunities for investing in local supply chain and businesses that can support the development of the Scheme and other solar projects in the area.</p> <p>With specific regard to the Scheme's supply chain, the Framework SSCEP highlights the following opportunities:</p> <ul style="list-style-type: none"> • Opportunity 4 - investigating measures to promote take up of jobs generated by the Scheme by local people. The starting point will be engagement with Local Authorities and Job Centre Plus, in order to tap into existing local employment support networks. • Opportunity 5 - introducing initiatives to maximise the diversity of the workforce. This measure could relate to a variety of demographic or disadvantaged groups. The most appropriate target group(s) could be identified through consultation and research post-consent of the DCO. • Opportunity 6 – maximising opportunities for local businesses for purchasing and contracts arising from the Scheme.
RR-005, RR-301, RR-126, RR-042, RR-269, RR-066,	Local and rural economy	Concerns that the Scheme would have a negative impact on the local and rural economy.	Section 14.8 of Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] provides an assessment of the Scheme's impacts on local economy through the calculation of Gross Value Added (GVA). The construction phase is expected to result in a minor beneficial (not significant) effect on local economy due to

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-100, RR-143, RR-315, RR-025, RR-138			increased spend in the local area by construction employees. The effect on agricultural production is assessed as minor adverse (not significant), as the Scheme would take up less than 1% of agricultural land in Lincolnshire.
RR-143, RR-315, RR-025, RR-138	Tourism	Concern that tourism in the local area will be negatively impacted.	The Principal Site is not located within an area adjacent to visitor attractions and as such, the Scheme is not considered to impact on tourism. It is also noted that the Planning Inspectorate's EIA Scoping Opinion [APP-052] did not identify that an assessment of impacts on tourism was required.
RR-136, RR-306, RR-058, RR-133, RR-310, RR-199, RR-205, RR-227	Quality of life	Concern that the Scheme would lower the quality of life and impact on residential amenity within the area.	<p>The Applicant recognises that the potential for future environmental changes associated with the Scheme during construction, operation and decommissioning are currently a source of concern for some local residents. To address this concern, the Applicant has undertaken a comprehensive and robust Environmental Impact Assessment, such that any likely significant effects of the Scheme have been identified and mitigated. Section 11.8 of Chapter 11: Human Health of the Environmental Statement [APP-042] assesses potential effects of the Scheme on health and wellbeing of local residents. The assessment takes a holistic approach to health and considers a wide range of health determinants which are relevant to quality of life and amenity. The assessment considers elements of the Scheme which could affect mental health (for example changes in landscape and visual amenity, noise, access to open space and employment) as well as physical health (for example associated with air pollution and access to healthcare facilities). No significant adverse effects are identified with regards to human health, following the implementation of mitigation measures committed to by the Scheme.</p> <p>In terms of disruption during the construction, operational and decommissioning phases and in recognition of the potential for impacts on mental health that could arise from activities on site, and surroundings, there are measures set out in the Framework CEMP [EN010142/APP/7.8(Rev01)], Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] to reduce or avoid human health and wellbeing related impacts during the construction, operational and decommissioning phases, respectively. These measures are secured through requirements in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)] which provide that the detailed management plans must be substantially in accordance with the relevant framework plans.</p> <p>Regarding effects on local amenity, Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] assesses the impact of the Scheme on local land use and amenity. The assessment concludes that, taking into account the residual effect assessment results of the air quality, noise, traffic and visual assessments, there are no residents, businesses or community facilities that would be likely to experience a significant effect on their amenity during construction, operation or decommissioning from effects acting in combination. Further details with respect to specific embedded mitigation measures relevant to minimising amenity impacts associated with traffic, noise and air quality are set out in Chapter 6: Air Quality [APP-037], Chapter 13: Noise and Vibration [AS-006] and Chapter 16: Transport and Access [APP-047]. This includes in respect of potential impacts on mental health.</p> <p>The Applicant will work with the Local Authorities to ensure that the local community is affected as little as possible, whether that be by targeting contractors with social value commitments during construction or wider community benefit initiatives.</p> <p>In addition, Chapter 11: Human Health of the Environmental Statement [APP-042] finds beneficial impacts on employment and income, prioritisation of walking routes (through new permissive paths) and climate change (through a substantial emissions reduction relative to the without-Scheme baseline) during operation. These impacts will lead to positive effects on human health, including both physical and mental health.</p>
PR-044, RR-116, RR-058, RR-175, RR-096	House prices	Concerns that house prices will decrease as a result of the Scheme.	In terms of property value, impacts on property prices are not a material consideration under section 104 of the Planning Act 2008, which sets out the matters the Secretary of State must have regard to, which includes the relevant National Policy Statements (NPS), which in this case are NPS EN-1 (Ref 1-17), NPS EN-3 Ref 1-18 and NPS EN-5.

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			None of these policy documents consider property prices, and it therefore should not be a factor which is considered by the Secretary of State when determining the Application for development consent.

Soils and Agriculture

Table 2-16: Applicants Responses to Public Relevant Representations relating to Soils and Agriculture

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-005, RR-011, RR-024, RR-037, RR-044, RR-056, RR-088, RR-158, RR-180, RR-184, RR-198, RR-200, RR-203, RR-252, RR-253, RR-278, RR-281, RR-312, RR-049, RR-079, RR-118, RR-218, RR-244, RR-254, RR-275, RR-288, RR-306, RR-326, RR-330, RR-003, RR-105, RR-116, RR-038, RR-301, RR-064, RR-006, RR-302, RR-071, RR-188, RR-232, RR-230, RR-077, RR-141, RR-047, RR-152, RR-173, RR-010, RR-053, RR-074, RR-084, RR-119, RR-124, RR-126, RR-128, RR-137, RR-267, RR-073, RR-217, RR-300, RR-222, RR-269, RR-045, RR-240, RR-282, RR-223, RR-153, RR-216, RR-220, RR-106, RR-193, RR-296, RR-304, RR-133, RR-156, RR-280, RR-236, RR-241, RR-310, RR-329, RR-175, RR-196, RR-266, RR-072, RR-050, RR-015, RR-028, RR-043, RR-085, RR-092, RR-110, RR-135, RR-161, RR-189, RR-210, RR-213, RR-219, RR-225, RR-298, RR-187, RR-308, RR-178, RR-290, RR-229, RR-075, RR-112, RR-151, RR-331, RR-226,	Loss of agricultural land and food production	<p>Concerns about the loss of high-quality agricultural land being used for the Scheme, including after decommissioning.</p> <p>Concerns about the impact on food production and food security, including the potential for increased food prices and reliance on importing food.</p>	<p>Agricultural land quality was a key consideration in the Applicant's site selection process as set out in paragraph 4.5.13 of Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and paragraph 3.5.5 of the Design and Access Statement [AS-031].</p> <p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into account reductions to the Order limits following the Applicant's Change Request (granted on 24 October 2024), for the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is provided within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p> <p>As set out in Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. All other infrastructure will be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a Decommissioning Environmental Management Plan (DEMP). In accordance with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)]. The only potential permanent removal of land from agricultural use may result from proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However the potential change of use of 0.07% of agricultural land that is BMV land to proposed woodland is not considered to be significant, and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60 year operational period has the potential to accrue improvement to soil function over a large area. Whilst not food production, woodland presents benefits provided by the Scheme in terms of biodiversity and provides future opportunities for farm diversification.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 of Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire. Land can continue in agricultural</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-256, RR-270, RR-018, RR-023, RR-027, RR-034, RR-041, RR-054, RR-066, RR-096, RR-108, RR-125, RR-144, RR-159, RR-171, RR-257, RR-273, RR-286, RR-299, RR-016, RR-017, RR-052, RR-086, RR-130, RR-142, RR-143, RR-157, RR-170, RR-199, RR-205, RR-228, RR-250, RR-314, RR-315, RR-319, RR-009, RR-025, RR-065, RR-127, RR-138, RR-140, RR-174, RR-181, RR-190, RR-227, RR-320, RR-026, RR-046, RR-067, RR-090, RR 136, RR-224, RR-238, RR-272, RR-185, RR-235, RR-258, RR-294, RR-167, RR-042, RR-297, RR-271, RR-031, RR-058, RR-076, RR-182, RR-032, RR-274, RR-008, RR-020, RR-022, RR-146, RR-263, RR-019, RR-150, RR-007, RR-012, RR-055, RR-061, RR-114, RR-154, RR-201, RR-295, RR-123, RR-204, RR-029, RR-069, RR-163, RR-195, RR-115, RR-148, RR-166, RR-191, RR-194, RR-202, RR-243, RR-262, RR-305, RR-313, RR-040, RR-099, RR-100, RR-104, RR-149, RR-176, RR-183, RR-289, RR-132, RR-260, RR-107, AS-034			<p>production through the operational phase and that following operation, the land used for the Scheme can revert back to current agricultural management.</p> <p>Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] assesses the loss of agricultural land in combination with all cumulative solar schemes (Gate Burton Energy Park, West Burton Solar Project and the Cottam Solar Project and others set out in Table 18-22 in Chapter 18 of the Environmental Statement [APP-049]). This confirms that in combination with all cumulative solar developments that there is still not a significant effect on agricultural production as a result of the schemes. The area of agricultural land that would be temporarily taken out agricultural use across all four schemes would be 2.2% of agricultural land in Lincolnshire.</p> <p>The Applicant has also prepared a report setting out the cumulative effects of solar projects on BMV land within Lincolnshire, which is located at Appendix B of this document. This report further concludes that the potential permanent loss of BMV land in Lincolnshire as a result of solar DCO projects would be 0.8%, and would be 0.27% as a result of ground mounted solar TCPA projects. This amounts to only 0.9% of all BMV land within Lincolnshire permanently lost to solar projects within Lincolnshire.</p> <p>The Secretary of State in his recent decisions for Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] recognised the local concerns on the loss of productive agricultural land but concluded that, on a cumulative basis alongside the other solar projects (including the Tillbridge Solar Project), that the cumulative assessments forming part of each application have suitably considered cumulative effects. The Secretary of State at paragraph 4.178 of the Gate Burton Energy Park decision states that the <i>“cumulative loss of BMV land in Lincolnshire due to NSIP solar projects amounts to 0.83% of the total BMV land with a further 0.21% loss to TCPA solar projects. The Secretary of State considers that this is only around 1% of the total BMV land in Lincolnshire, further noting that the land will be lost for a temporary, albeit long-term period and that the land can be returned upon decommissioning of development to its original state. The Secretary of State places great importance on BMV land but is satisfied that the siting of the Proposed Development on BMV land has been justified.”</i></p> <p>The Tillbridge Solar Project, through its site selection process sought to minimise impacts upon BMV land and through design iteration of the Scheme, has further minimised impacts. The siting of the Scheme on BMV land is justified and the loss of agricultural land and therefore potential food production would be temporary and reversible allowing the Principal Site to be brought back into agricultural use following decommissioning.</p> <p>In the recent Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] decisions, the Secretary of State (SoS), determined that the cumulative loss of BMV land across these two schemes, together with West Burton and the Tillbridge Solar Project, and therefore the potential impact upon agricultural land and food production, will be minor and would not impact food security when these four solar NSIPs are considered both individually and cumulatively. The SoS agreed with the ExA's recommendations on agricultural land use in considering the Gate Burton Energy Park. The ExA confirmed in its recommendation report at paragraph 3.11.114 that:</p> <p><i>“Whilst I appreciate the concerns of many IPs and the concerns expressed there is no meaningful assessment of the extent of lost production. Furthermore, given the national and regional figures identified by the Applicant in respect of cereal production even taking account of the whole site area there would be little discernible effect. This would be true even in a cumulative scenario on the basis of the figures produced by the Applicant.”</i></p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-037, RR-053, RR-126, RR-135, RR-087, RR-132	Impact on soils	Concerns on damage to soils and soils composition / contamination / lack of nutrient replacement.	<p>Section 15.8 of Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046] provides an assessment of the Scheme's likely significant effects on agricultural land quality and soil resource. Soil resource data has been collected as part of the detailed ALC field assessment presented in Appendix 15-2: Agricultural Land Classification Baseline Report of the Environmental Statement [APP-116]. The soil resource within the Principal Site is predominantly heavy textured (high clay content) topsoil and subsoil. The majority of land within the Principal Site is under conventional arable management with ploughing each year, which results in a decline in soil health, soil organic matter always falling towards a low equilibrium.</p> <p>While the Scheme is operational, it will be temporarily taken out of arable production, and the Principal Site will be planted with semi-improved grassland (as set out in paragraph 7.1.10 of the Framework LEMP [EN010142/APP/7.17(Rev02)] which will inform a detailed LEMP which will need to be in substantial accordance with the Framework LEMP and approved by with the Local Planning Authority (/Authorities), as secured by requirement 7 of the draft DCO [EN010142/APP/3.1(Rev03)]. This will provide benefits to the quality of the soil, including:</p> <ul style="list-style-type: none"> • No bare soil surfaces vulnerable to wind and water erosion; • Improved infiltration of rainwater reducing erosive surface water runoff; • Greater exploitation of subsoil by perennial plant roots, improving drainage and loosening compacted subsoils; and • Recovery of topsoil organic matter to a higher equilibrium, improving aggregate stability, water holding capacity and plant nutrient availability. <p>A Framework SMP [EN010142/APP/7.12(Rev01)] has been prepared and submitted with the Application and includes measures to ensure that soil quality and resource is protected during construction and decommissioning. The construction and decommissioning of the Scheme will be managed through the implementation of a CEMP, DEMP and SMP, which will include measures to ensure that soil quality and resource is protected during construction, operation and decommissioning. These are secured by requirements 12, 18 and 20 of the draft DCO [EN010142/APP/3.1(Rev03)], respectively, and will need to be substantially in accordance with the Framework CEMP [EN010142/APP/7.8(Rev01)], Framework DEMP [EN010142/APP/7.10(Rev01)] and Framework SMP [EN010142/APP/7.12(Rev01)] and implemented in accordance with the approved details. These management measures, such as preventing the disturbance of soil when wetted to a plastic consistency and the maintenance of a green cover over land, will ensure that the soil resource is managed and protected to ensure that arable farming can resume post operation of the Scheme.</p> <p>To maintain nutrient status, farmers routinely monitor soils and calibrate fertiliser applications against crop need, organic returns (such as manure), the previous crop and economic benefit. Farmers are deterred from applying excess fertiliser through guidance such as Rule Book 209 (RB209). This process will resume on return to arable production. Maintaining the current nutrient status of arable land through the operational phase of the solar farm would serve no useful purpose, would be detrimental to biodiversity in the green cover and risk excess nutrient being leached from the site polluting water.</p>
RR-037, RR-282, RR-025, RR-138	ALC Assessment	Concerns with ALC Assessment undertaken.	<p>The ALC assessment undertaken for the Principal Site follows Natural England guidance given in their technical information note Agricultural Land Classification: protecting the best and most versatile land (TIN049) (Ref 1-1) - see paragraph 15.3.5 of Chapter 15: Soils and Agriculture of the ES [APP-046]. The ALC assessment presented is being reviewed by Natural England, the statutory consultee on this issue, that retains a number of ALC specialists. The Applicant is in the process of developing a Statement of Common Ground with Natural England [EN010142/APP/9.19] on the agriculture and soils assessment, the first revision of which is submitted at Deadline 1.</p>

Transport and Access

Table 2-17: Applicants Responses to Public Relevant Representations relating to Transport and Access

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-024, RR-044, RR-253, RR-118, RR-306, RR-330, RR-105, RR-116, RR-064, RR-101, RR-296, RR-133, RR-233, RR-154, RR-023, RR-243, RR-083, RR-205, RR-228, RR-315, RR-127, RR-140, RR-190, RR-320, RR-227	Impacts on local roads	<p>Concerns about the number of heavy goods vehicles (HGVs) on single track roads. Concerns that roads will be damaged and the local network cannot cope</p> <p>Concerns regarding access points of HGVs and the negative impact this will have on local communities</p>	<p>The Framework Construction Traffic Management Plan (CTMP) [EN010142/APP/7.11(Rev02)] provides full details of embedded mitigation measures that are proposed to prevent or reduce potential adverse effects associated with construction traffic on local roads. A detailed CTMP (which must substantially accord with the Framework CTMP) will need to be approved post consent prior to construction with the relevant local authorities and this is secured by requirement 14 in Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>Access routes are illustrated within Appendix B: Figure 1 of the Framework CTMP [EN010142/APP/7.11(Rev02)]. As detailed in the Framework CTMP [EN010142/APP/7.11(Rev02)], the site accesses will be designed to provide appropriate visibility to minimise the likelihood of vehicles (including HGVs) obstructing the public highway and will be suitably marshalled in order to safely control vehicle movements. Traffic Regulation Measures Plans [EN010142/APP/2.5(Rev03)] have also been prepared in support of the Application to demonstrate how construction traffic will be safely managed. Where issues were identified, carriageway widening and/or vegetation removal and associated traffic management to facilitate safe implementation would be introduced.</p> <p>As detailed in paragraph 7.2.16 of the Framework CTMP [EN010142/APP/7.11(Rev02)], highway condition surveys will be undertaken before, during and after the construction to identify any damage which has resulted from the Scheme that need to be remediated.</p> <p>Where the pre-condition survey identifies that measures should be put in place to protect and maintain the road surface, the Local Highways Authorities (LHAs) will be consulted ahead of works being undertaken by the Scheme.</p>
RR-272, RR-118, RR-218, RR-219, RR-306, RR-330, RR-038, RR-081, RR-101, RR-232, RR-271, RR-233, RR-060, RR-061, RR-154, RR-123, RR-247, RR-052, RR-127, RR-140	Increase in traffic	Concerns about increases in traffic in the construction period and the negative impact this will have on local communities	<p>A full and detailed assessment of potential traffic and transport impacts from construction at sensitive receptors has been undertaken within section 16.8 of Chapter 16: Transport and Access of the Environmental Statement [APP-047]. The conclusions indicate that during construction, only one significant residual adverse effect is anticipated on severance, pedestrian delay and non-motorised users amenity. This is in relation to severance, pedestrian delay (incorporating delay to all non-motorised users) on the B1241 (ATC 23). The significant adverse effect on the B1241 will only occur in the worst-case scenario for a short period of time if activity on the construction of the Cable Route Corridor is concentrated on the B1241 north of Fleets Road (in the order of a couple of weeks).</p> <p>The Framework CTMP [EN010142/APP/7.11(Rev02)] provides full details of embedded mitigation measures that are proposed to prevent or reduce potential adverse effects associated with construction traffic on local roads. A detailed CTMP (which must substantially accord with the Framework CTMP) will need to be approved post consent prior to construction with the relevant local authorities and this is secured by requirement 14 in Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)].</p>
RR-219, RR-052	Impact of traffic on ecology	Concerns on ecological disruption caused by traffic	An assessment of impacts on ecological receptors is presented within section 9.9 of Chapter 9: Ecology and Nature Conservation of the Environmental Statement [APP-040] . The assessment accounts for disruption from construction traffic and any works required along local roads. With mitigation in place, in the form of the Framework CEMP [EN010142/APP/7.8(Rev01)] , no significant residual effects are considered likely.
RR-081, RR-101, RR-096, RR-143	Safety impacts of traffic	Concerns on the impact on safety caused by increased traffic	Section 16.8 of Chapter 16: Transport and Access of the Environmental Statement [APP-047] includes a detailed assessment of the potential construction traffic impacts associated with the Scheme, including on road user and pedestrian safety. No significant effects on safety have been identified with the implementation of measures set out within the Framework CTMP [EN010142/APP/7.11(Rev02)] .

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-061, RR-052	Impacts on PRoW	Concerns on the impact of the Scheme on PRoW	<p>The Framework CTMP [EN010142/APP/7.11(Rev02)] provides full details of embedded mitigation measures that are proposed to prevent or reduce potential adverse effects associated with construction traffic on local roads. A detailed CTMP (which must substantially accord with the Framework CTMP) will need to be approved post consent prior to construction with the relevant local authorities and this is secured by requirement 14 in Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>Traffic Regulation Measures Plans [EN010142/APP/2.5(Rev03)] have also been prepared in support of the Application to demonstrate how construction traffic will be safely managed. Where issues were identified, carriageway widening and/or vegetation removal and associated traffic management to facilitate safe implementation would be introduced.</p> <p>Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045] assesses effects of the Scheme on PRoWs.</p> <p>During construction and decommissioning, there are not expected to be any permanent PRoW closures although some minor diversions are likely to be required to provide safe access across the Order limits whilst construction and decommissioning activities are taking place, with PRoW to be diverted or managed with a banksman (or similar). These diversions will be temporary.</p> <p>During the operation of the Scheme, no permanent closures or diversions to PRoWs are proposed. Permissive paths to enhance the current PRoW network will also be provided as part of the Scheme, with one route connecting Common Lane to Kexby Road, and the second route connecting Common Lane to Northlands Road. This will offer recreational access in an area where PRoWs are limited and will also improve north-south off-road links. The permissive paths will be located within 25 m wide corridors that will allow sufficient space for planting such as hedgerows to screen solar infrastructure and offer biodiversity and visual interest to users. A minor beneficial effect is expected due to the provision of additional permissive pathways.</p> <p>The Framework PRoW Management Plan [APP-228] outlines how PRoWs will be managed during the construction, operation and decommissioning of the Scheme. The measures contained within Section 3 of this document will help to ensure the ongoing operation of PRoW in the local area in terms of user safety and accessibility. A detailed PRoW Management Plan will be approved post consent prior to construction by the relevant local authorities, and this will be required to be substantially in accordance with the Framework PRoW Management Plan [APP-228], as secured by Requirement 16 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. Details of the proposed management of PRoW (including diversions) and any PRoW mitigation during the construction, operation and decommissioning of the Scheme, as well as the implementation of permissive routes is also set out in the Framework CEMP [EN010142/APP/7.8(Rev01)], Framework OEMP [EN010142/APP/7.9(Rev01)], and Framework DEMP [EN010142/APP/7.10(Rev01)]. Detailed management plans will need to be approved post consent prior to construction by the relevant local authorities. These detailed management plans must substantially accord with the framework management plans and this is secured by the relevant requirements in Schedule 2 to the draft DCO [EN010142/APP/3.1(Rev03)].</p>

Materials and Waste

Table 2-18: Applicants Responses to Public Relevant Representations relating to Materials and Waste

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-076, RR-043, RR-037, RR-158, RR-253, RR-079, RR-075, RR-301, RR-006, RR-071, RR-137, RR-300, RR-125, RR-175, RR-286, RR-100, RR-025, RR-138, RR-227, RR-301, RR-143, RR-157	Manufacturing of solar panels	<p>Concern about the carbon footprint and ethics of manufacturing and transporting the solar panels from countries such as China.</p> <p>Comments voice concerns that the materials should be from the Britain or from Europe.</p>	<p>At this stage the final choice of panels is not known and a supplier has not been identified. However, the Applicant recognises that there are risks of modern slavery being connected to UK businesses and supply chains and will comply with all legal obligations regarding modern slavery.</p> <p>Regarding this, the Framework Skills, Supply Chain and Employment Plan (SSCEP) [APP-232] sets out that the procurement strategy for the Scheme must be shaped to maximise opportunities to local businesses, with an ethical procurement policy, whilst seeking to minimise associated environmental impacts and safeguarding human rights in the supply chain. The final SSCEP must be substantially in accordance with the Framework SSCEP and is required to be submitted to and approved by the relevant planning authority (/authorities) before construction can commence on the Scheme. This is secured in Requirement 19 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>The carbon emissions associated with the manufacture and transport of the solar panels and their replacement components have been considered in the GHG impact assessment within section 7.8 of Chapter 7: Climate Change of the Environmental Statement [APP-038]. For a worst-case assessment of embodied carbon in materials and transport emissions, it has been assumed that the PV panels will be sourced from China, although there is also potential for similar panels to be procured from Europe. Although the transport of solar panels will incur some GHG emissions, even considering this the Scheme will save approximately 15 million tonnes of CO2e when compared to the equivalent amount of energy generated by a fossil-fuelled gas fired power plant.</p>
RR-253, RR-116, RR-232, RR-217, RR-300, RR-271, RR-240, RR-270, RR-286, RR-100, RR-025, RR-138	Recycling of panels	<p>Concern of the lack of methods to recycle the large number of solar panels once they are at end of life, along with the cost of doing so.</p>	<p>As set out in section 2.7 of the Framework OEMP [EN010142/APP/7.9(Rev01)] and section 2.10 of the Framework DEMP [EN010142/APP/7.10(Rev01)], the Applicant is committed to maximise recycling and reuse of the Scheme components at the end of their life. There are already organisations around the UK and Europe specialising in solar recycling, such as PV Cycle and the European Recycling Platform. They are working with solar developers to minimise electrical waste and recycling old panels in line with the Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 (Ref 1-8). In addition, companies like SECONDSOL offer a marketplace service for the purchase and selling of second-hand PV panels and equipment, where there is still a good level of life in the equipment remaining. Panels that have developed faults or damage can also be refurbished and repowered by specialist companies and the manufacturers and resold or reinstalled. The Applicant will adhere with the industry best practice outlined in Solar Power Europe's Lifecycle Quality Best Practice Guidance (Version 1.0, 2021) (Ref 1-42). A quantitative cumulative assessment is provided in the Waste Topic Paper attached as Appendix A to this report. A landfill diversion rate of 70% is considered a worst case for the purposes of the assessment. Section 2.7 of the Framework OEMP [EN010142/APP/7.9(Rev01)] and section 2.10 of the Framework DEMP [EN010142/APP/7.10(Rev01)] have been updated at Deadline 1 to include a commitment to 70% waste recovery (diversion from landfill). A detailed OEMP and DEMP, which will be required to be substantially in accordance with the Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] will need to be approved by the relevant Local Planning Authority (/Authorities) prior to the relevant phase, and this is secured by requirement 13 and requirement 20, respectively, of the draft DCO [EN010142/APP/3.1(Rev03)]. As outlined in paragraph 2.10.2 of the Framework DEMP "[p]rior to the decommissioning works commencing, a Decommissioning Resource Management Plan (DRMP) (also referred to as a Site Waste Management Plan) will be prepared by the Applicant, which will provide a waste estimate, specify key responsibilities, reporting and auditing and waste recovery targets."</p>

Other Environmental Topics

Table 2-19: Applicants Responses to Public Relevant Representations relating to Other Environmental Topics

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-002	Aircrafts	Concern over crashing light aircraft into solar panels.	Sturgate Airfield's runway is located approximately 1.4km (approx. 1,600 yards) from the proposed solar panels at the nearest point, not a few hundred yards away as stated in the full Representation. The Applicant considers that the Scheme infrastructure is therefore sited at an appropriate distance away from the runway and the risk of aircraft crashing into the solar panels negligible.
RR-075	EMFs	Concern over the harm that electromagnetic forces can have on humans.	<p>The Applicant understands concerns raised regarding "radiation" from electric and electro-magnetic fields (EMF). Section 17.9 of Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048] provides an assessment of the potential impacts associated with EMF. Using National Grid's known levels of electro-magnetic field generation, the assessment considers that, as a worst case scenario, a residential receptor would need to be within 5m of the centreline of the high voltage cabling associated with the Scheme, and for the cabling to be overlapped by other electricity infrastructure, for potentially significant effects to occur on human receptors. No cabling is proposed within 10m of from the façade of any residential dwelling. This is confirmed in the Outline Design Principles Statement [AS-058], compliance with which is secured by Requirement 5 of the draft DCO [EN010142/APP/3.1(Rov03)]. Therefore, no significant adverse effects to residential receptors from EMF's are predicted to occur.</p> <p>Section 17.9 of Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048] also states that the presence of the public using PRoW either directly above or adjacent to underground cables associated with the Scheme would be transient and it is considered that the level of EMF exposure to users of PRoW would be similar to that associated with general household appliances (and noticeably less than associated with the exposure when using certain appliances, e.g. a vacuum cleaner). Therefore, no significant EMF effects to users of PRoW are predicted to occur.</p>
RR-219, RR-116, RR-282, RR-100, RR-227, RR-198	Glint and glare	Concern over the impacts to amenity caused by glint and glare from Solar PV panels	Section 17.4 of Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048] and supporting Appendix 17-2: Glint and Glare Assessment of the Environmental Statement [APP-120] provides an assessment of glint and glare effects of the Scheme. In accordance with NPS EN-3 (Ref 1-18), the assessment considers effects upon surrounding road users, railway operations, dwellings, PRoW, bridleways and aviation activity, based on the visibility of PV panels from receptors, their angles using geometric calculations, and amount of sunlight. The assessment states that the Scheme's design, which includes careful siting in the landscape, conserving existing vegetation patterns and creating new green infrastructure through planting, will mean that it is unlikely that adverse effects will be experienced from glint and glare. The glint and glare assessment concludes that there will be no impacts on bridleways, residential receptors or road receptors, and low (not significant) impacts on aviation receptors on Runway 27 at Sturgate Airfield.
RR-037	Heat from solar panels	Concerns relating to thermal uplift due to black surfaces of solar panels	Regarding concerns over the thermal effects of black solar panels, the scientific literature currently does not present a consensus of the localised climate effects of solar panels some studies suggest that solar farms may produce a cooling effect on land surface temperatures or otherwise cool completely overnight, making it unlikely for a heat island effect to occur. However, It is acknowledged that other research has also found warmer temperatures over PV panels than vegetated areas, particularly during the night. However, on balance this is not considered a material risk for the Scheme, as any increase in localised temperatures is not expected to be noticeable or significant.
RR-037	Communication interference	Concerns relating to communication interference	As set out in Section 17.7 of Chapter 17: Other Environmental Topics of the Environmental Statement [APP-048], the Scheme is unlikely to interfere with telecommunications infrastructure or television reception as typically structures need to be more than 5m in height to interfere with telecommunication and television signals.

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			As set out in Section 3.4.11 of Chapter 3: Scheme Description of the Environmental Statement [AS-053], the solar panels which form the most significant development on site have a maximum height of 3.5m. The Applicant acknowledges that, as set out in Chapter 3: Scheme Description of the Environmental Statement [AS-053], the parameters for the Scheme include some building heights in excess of 5m and estimates the following heights in respect of the Substations - Switchgear Building (10m); Switch Room (6m); Control Building (7m); and Solar Farm Control Centre (6m)). Considering that the vast majority of the Scheme will be less than 5m in height (noting the exceptions highlighted above and the distance of these structures from residential properties), any effects on telecommunications infrastructure or television reception in the construction, operation and decommissioning phases are expected to be negligible.

Cumulative Effects and Interactions

Table 2-20: Applicants Responses to Public Relevant Representations relating to Cumulative Effects and Interactions

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-011, RR-026, RR-056, RR-088, RR-158, RR-184, RR-100, RR-238, RR-253, RR-325, RR-118, RR-219, RR-037, RR-044, RR-306, RR-330, RR-003, RR-116, RR-038, RR-006, RR-010, RR-119, RR-126, RR-162, RR-249, RR-294, RR-073, RR-030, RR-271, RR-147, RR-282, RR-264, RR-321, RR-016, RR-052, RR-100, RR-143, RR-199, RR-250, RR-315, RR-025, RR-087, RR-138, RR-227, RR-320, RR-005	Cumulative impacts on landscape	Concerns relating to the cumulative impact of other solar and battery schemes on the rural landscape of the area. Concerns over the cumulative impacts of the Schemes on the industrialisation of the landscape.	<p>Cumulative effects and interactions between the Scheme and other solar DCOs are assessed in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. The Scheme and other solar DCOs (Gate Burton Energy Park, Cottam and West Burton Solar Projects) have worked collaboratively during design development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures. Consideration has also been given as to how habitat creations link with other solar DCOs and more widely across the landscape.</p> <p>Whilst the Applicant acknowledges that significant operational (Year 15) cumulative landscape effects will arise for Local Landscape Character Area LLCA 3A Till Vale and a small number of representative viewpoints, no significant effects will arise on any other receptor assessed in Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043], and the design of the Scheme has sought to limit these effects as far as practicable, including through the provision of an ecological buffer to the Cottam Solar Project in the south; and a minimum of approximately 450 m separation through undeveloped land with no public access to panels within the Cottam Solar Project to the north. Intervisibility with the Gate Burton and West Burton projects is limited by spatial separation, with distance from panels within the Principal Site being approximately 4.5 km and 7.5 km respectively.</p> <p>At Year 15 of operation and when planting is sufficiently mature, intervisibility of the Scheme with other developments will largely be limited to the elevated representative viewpoints along the Cliff, with visual receptors on the lower-lying Till Vale being subject to screening through provision of mitigation planting outlined in the Framework Landscape and Ecological Management Plan (LEMP) [EN010142/APP/7.17(Rev02)]. The draft DCO [EN010142/APP/3.1(rev03)] also requires that the final Landscape and Ecological Management Plan be approved by the local planning authority. The design in the LEMP is illustrated on the Indicative Landscape Masterplan [AS-064].</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-024, RR-056, RR-088, RR-075, RR-091, RR-184, RR-198, RR-224, RR-238, RR-253, RR-278, RR-118, RR-330, RR-077, RR-162, RR-282, RR-143, RR-199, RR-227, RR-320	Cumulative impacts on agricultural land	Concerns relating to the cumulative impact of other solar schemes in the area on Agricultural land.	<p>Agricultural land quality was a key consideration in the Applicant's site selection process as set out in paragraph 4.5.13 of Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] and paragraph 3.5.5 of the Design and Access Statement [AS-031].</p> <p>The Scheme is located primarily on lower quality agricultural land, with the majority of the Scheme being on land not classed as Best and Most Versatile (BMV). Taking into account reductions to the Order limits following the Applicant's Change Application submitted in September 2024, for the Principal Site, 95.5% of the land used is non BMV land. This consists of 85.6% Grade 3b land (non-BMV) and 9.9% classified as non-agricultural. The remaining land, which comprises 4.5% (60.3 hectares) of BMV land, consists of 3.8% (51.1ha) of Grade 3a BMV land and 0.7% (9.2ha) being classed as Grade 2, BMV land. The 4.5% of BMV land within the Principal Site comprises nine small, isolated parcels of BMV land. The parcels do not follow field boundaries and generally form isolated pockets across the Principal Site, as shown in Figure 15-1: Principal Site Agricultural Land Classification Distribution of the Environmental Statement [APP-192]. These parcels are in farming use alongside the lower grade BMV land. Further information on baseline agricultural land conditions is provided within Chapter 15: Agriculture and Soils of the Environmental Statement [APP-046].</p> <p>As set out in section 15.8 of Chapter 15: Soils and Agriculture of the Environmental Statement [APP-046], the vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following the decommissioning of the Scheme. All other infrastructure will be removed allowing agricultural production to resume. Removal of hard standing and access tracks will be followed by reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. These measures will be set out in a Decommissioning Environmental Management Plan (DEMP). In accordance with requirement 20 of the draft DCO [EN010142/APP/3.1(Rev03)], this will need to be substantially in accordance with the Framework DEMP [EN010142/APP/7.10(Rev01)] submitted as part of the Application. The only potential permanent removal of land from agricultural use may result from proposed woodland planting which has the potential to be permanent, subject to landowner decisions following the decommissioning of the Scheme. However, the potential change of use of 0.07% of agricultural land that is BMV land to proposed woodland is not considered to be significant, and would also provide ecological benefit. In addition, the conversion of arable land to grassland during the 60 year operational period has the potential to accrue improvement to soil function over a large area. Whilst not for food production, woodland presents benefits provided by the Scheme in terms of biodiversity and provides future opportunities for farm diversification.</p> <p>The effect of the Scheme on agricultural land with regards to food production has been considered in Section 14.8 of Chapter 14: Socio-economics and Land Use of the Environmental Statement [APP-045]. There are no likely significant effects across the construction and operational phases with regards to food production, considering that the Scheme area forms less than 1% of agricultural land available in Lincolnshire. Land can continue in agricultural production through the operational phase and that following operation, the land used for the Scheme can revert back to current agricultural management.</p> <p>Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] assesses the loss of agricultural land in combination with all cumulative solar schemes (Gate Burton Energy Park, West Burton Solar Project and the Cottam Solar Project and others set out in Table 18-22 in Chapter 18 of the Environmental Statement [APP-049]). This confirms that in combination with all cumulative solar developments that there is still not a significant effect on agricultural production as a result of the schemes. The area of agricultural land that would be temporarily taken out agricultural use across all four schemes would be 2.2% of agricultural land in Lincolnshire.</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>The Applicant has also prepared a report setting out the cumulative effects of solar projects on BMV land within Lincolnshire, which is located at Appendix B of this document. This report further concludes that the potential permanent loss of BMV land in Lincolnshire as a result of solar DCO projects would be 0.8%, and would be 0.27% as a result of ground mounted solar TCPA projects. This amounts to only 0.9% of all BMV land within Lincolnshire permanently lost to solar projects within Lincolnshire.</p> <p>The Secretary of State in his recent decisions for Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] recognised the local concerns on the loss of productive agricultural land but concluded that, on a cumulative basis alongside the other solar projects (including the Tillbridge Solar Project), that the cumulative assessments forming part of each application have suitably considered cumulative effects. The Secretary of State at paragraph 4.178 of the Gate Burton Energy Park decision states that the <i>“cumulative loss of BMV land in Lincolnshire due to NSIP solar projects amounts to 0.83% of the total BMV land with a further 0.21% loss to TCPA solar projects. The Secretary of State considers that this is only around 1% of the total BMV land in Lincolnshire, further noting that the land will be lost for a temporary, albeit long-term period and that the land can be returned upon decommissioning of development to its original state. The Secretary of State places great importance on BMV land but is satisfied that the siting of the Proposed Development on BMV land has been justified.”</i></p> <p>The Tillbridge Solar Project, through its site selection process sought to minimise impacts upon BMV land and through design iteration of the Scheme, has further minimised impacts. The siting of the Scheme on BMV land is justified and the loss of agricultural land and therefore potential food production would be temporary and reversible allowing the Principal Site to be brought back into agricultural use following decommissioning.</p> <p>In the recent Gate Burton Energy Park [EN010131] and Cottam Solar Project [EN010133] decisions, the Secretary of State (SoS), determined that the cumulative loss of BMV land across these two schemes, together with West Burton and the Tillbridge Solar Project, and therefore the potential impact upon agricultural land and food production, will be minor and would not impact food security when these four solar NSIPs are considered both individually and cumulatively. The SoS agreed with the ExA's recommendations on agricultural land use in considering the Gate Burton Energy Park. The ExA confirmed in its recommendation report at paragraph 3.11.114 that:</p> <p><i>“Whilst I appreciate the concerns of many IPs and the concerns expressed there is no meaningful assessment of the extent of lost production. Furthermore, given the national and regional figures identified by the Applicant in respect of cereal production even taking account of the whole site area there would be little discernible effect. This would be true even in a cumulative scenario on the basis of the figures produced by the Applicant.”</i></p>
RR-026, RR-073, RR-087	Cumulative impacts on biodiversity	Concern over cumulative biodiversity and wildlife impacts from the Scheme.	<p>Cumulative effects and interactions between the Scheme and other developments are assessed in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. Due to distance and spatial distribution, it is considered that the Scheme only has a potential for cumulative effects on ecology receptors with the other nearby solar DCOs (i.e. Gate Burton Energy Park, Cottam and West Burton Solar Projects). The Scheme and the other solar DCOs have worked collaboratively during design development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures. Consideration has also been given as to how habitat creations link with other proposed developments and more widely across the landscape.</p> <p>All four solar DCO schemes have made commitments to retain and protect the majority of boundary features and all other habitats of ecological value, including minimising hedgerow loss and intrusive crossing or culverting of</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>ditches and watercourses, along with providing substantial areas of open, undeveloped land. With the embedded mitigation measures included by all the solar DCOs, it is concluded that there is no potential for the elevation of the non-significant effects from each of the schemes to cumulatively generate significant effects on important ecological features.</p>
<p>RR-026, RR-184, RR-238, RR-253, RR-077, RR-294, RR-271, RR-025, RR-087, RR-138, RR-320, RR-010, RR-075, RR-052, RR-143, RR-315</p>	<p>Cumulative impacts on wellbeing</p>	<p>Concern that cumulative effects would result in impacts on the wellbeing of the community.</p>	<p>The assessment of cumulative impacts of the Scheme with other developments in the locality is set out in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049]. The Scheme and other solar DCOs have worked collaboratively during design development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures to minimise impacts on the wellbeing of the community. In terms of cumulative effects of the Scheme with other developments in the area, the only effects relating to human health are stated in Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] to include air quality, noise and vibration effects, transport and access and socio-economic effects. Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049] concludes that there would be no significant cumulative effects in relation to all of the above factors.</p> <p>The assessment of effects on human health has been reported within Chapter 11: Human Health of the Environmental Statement [APP-042]. This approach was agreed with PINS via the EIA Scoping process (refer to Appendix 1-1: EIA Scoping Report [APP-051] and Appendix 1-2: EIA Scoping Opinion [APP-052]). The assessment follows the guidance set out within NHS England's Healthy Urban Development Unit's (HUDU) Rapid Health Impact Assessment (HIA) Toolkit 2019 and the Institute of Environmental Management and Assessment (IEMA) guidance "Determining Significance For Human Health In Environmental Impact Assessment".</p> <p>Chapter 11: Human Health of the Environmental Statement [APP-042] assesses potential effects of the Scheme on health and wellbeing of local residents. The assessment takes a holistic approach to health and considers a wide range of health determinants which are relevant to quality of life and amenity. The assessment considers elements of the Scheme which could affect mental health (for example changes in landscape and visual amenity, noise, access to open space and employment) as well as physical health (for example associated with air pollution and access to healthcare facilities). No significant adverse effects are identified with regards to human health.</p> <p>In terms of disruption during the construction and operational phase and in recognition of the potential for impacts on mental health that could arise from activities on site, and surroundings, there are measures set out in the Framework CEMP [EN010142/APP/7.8(Rev 01)], Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)] to reduce or avoid human health and wellbeing related impacts during the construction and operational phase, respectively. These will inform a separate detailed CEMP, OEMP and DEMP that will need to be approved by the Local Planning Authority prior to construction, and this is secured by requirements 12, 13 and 20 respectively in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)], each of which require the relevant detailed management plan(s) to be substantially in accordance with the framework plans submitted as part of the DCO Application.</p> <p>Additionally, further details with respect to specific embedded mitigation measures relevant to minimising amenity impacts associated with traffic, noise and air quality are set out in Section 6.7 of Chapter 6: Air Quality of the Environmental Statement [APP-037], Section 13.7 of Chapter 13: Noise and Vibration of the Environmental Statement [AS-006] and Section 16.7 of Chapter 16: Transport and Access of the Environmental Statement [APP-047].</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>The Applicant will work with the Local Authorities to ensure that the local community is affected as little as possible, whether that be (for example) targeting contractors with social value commitments during construction or wider community benefit initiatives.</p> <p>Section 11.8 of Chapter 11: Human Health of the Environmental Statement [APP-042] also finds beneficial impacts on employment [] and income, prioritisation of walking and cycling routes (through new permissive paths) and climate change (through a substantial emissions reduction relative to the without-Scheme baseline) during operation. These impacts will lead to positive effects on human health, including both physical and mental health.</p> <p>In addition to the above, Requirement 4 of the draft DCO [EN010142/APP/3.1(Rev03)] requires the establishment of a community liaison group prior to the commencement of development whose terms of reference must be approved by the relevant planning authority. The community liaison group will provide a means for the Applicant to collaborate and communicate with local residents. This will help to alleviate concerns about each phase of the Scheme, thereby supporting health and well-being. The draft DCO [EN010142/APP/3.1(Rev03)] also contains a number of other control mechanisms that will ensure that the Scheme is constructed, operated and decommissioned in a reasonable manner to reduce impacts upon residential amenity and therefore health and well-being. This relates to requirements 12 (CEMP), 13 (OEMP), 14 (CTMP), 15 (operational noise), 16 (PRoW diversions) and 19 (decommissioning and restoration).</p>

Environmental Impact Assessment

Table 2-21: Applicants Responses to Public Relevant Representations relating to the Environmental Impact Assessment

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-067, RR-053, RR-126, RR-267, RR-271, RR-045, RR-310, RR-176, RR-205, RR-289, RR-065, RR-227	Environmental impacts	Concerns that the Scheme will have a negative effect on the environment.	The Applicant has undertaken an Environmental Impact Assessment (EIA) of the Scheme, which is reported within the Environmental Statement [APP-031 to APP-208] submitted with the Application. The Environmental Statement provides an assessment of the effects of the Scheme on sensitive environmental receptors and resources and outlines mitigation proposed to avoid, minimise, restore and offset any impacts of the Scheme. All mitigation proposed is summarised within the Environmental Mitigation and Commitments Register [APP-209] .
RR-025, RR-138	Authoring of ES	Comment on no visibility on who carried out EIA assessment	The Applicant has carried out the Environmental Impact Assessment (EIA), which is presented in the Environmental Statement (ES) [APP-031 to APP-209] . As referred to in Chapter 1: Introduction of the Environmental Statement [APP-032] , the EIA was carried out by AECOM Ltd ('AECOM') on behalf of the Applicant. AECOM is an Institute of Environmental Management and Assessment (IEMA) Registered Impact Assessor and holds the IEMA EIA Quality Mark as recognition of the quality of AECOM's EIA product and continuous training of their environmental consultants. Appendix 1-3: EIA Statement of Competence of the Environmental Statement [APP-053] outlines the relevant expertise or qualifications of the experts at AECOM who prepared the ES.
RR-025, RR-138	Qualitative data collection	Concern that there is insufficient qualitative data to assess the impact on residents	The description of baseline conditions presented within the Environmental Statement [APP-031 to APP-208] is based on both, desk-based assessments and survey data, as relevant to the specific technical assessments. The subsequent assessment of effects is then either qualitative or quantitative depending on the assessment methodology for the specific technical assessment, in accordance with the methodology established through the EIA Scoping process (refer to Appendix 1-1: EIA Scoping Report of the Environmental Statement [APP-051] and

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>Appendix 1-2: EIA Scoping Opinion of the Environmental Statement [APP-052]). Assumptions and limitations associated with the characterisation of baseline conditions and the assessments are reported within the ES.</p> <p>The assessments of specific relevance to residential receptors include Chapter 6: Air Quality of the Environmental Statement [APP-037], Chapter 11: Human Health of the Environmental Statement [APP-042], Chapter 12: Landscape and Visual Amenity of the Environmental Statement [APP-043], Chapter 13: Noise and Vibration of the Environmental Statement [AS-006], Chapter 14: Socioeconomics and Land Use of the Environmental Statement [APP-045], and Chapter 16: Transport and Access of the Environmental Statement [APP-047]. Each of these chapters provide further information with regards to their assessment methodologies, sources of information and assumptions and limitations associated with these assessments.</p>
RR-041	Compensation	Request for compensation during construction period for the negative impact to local residents.	<p>The Applicant is not proposing compensation or payment to those living or working outside of the Order limits for disturbance caused by the Scheme. The Applicant has carried out an environmental impact assessment following the requirements set out in law, the results of which are detailed in the Environmental Statement and its appendices. Where the Environmental Statement has identified significant effects, the Applicant has sought to mitigate these where practicable and to minimise residual effects. Such measures include proposed planting, traffic management measures and restrictions on construction working hours. Further details of the Applicant's mitigation proposals can be found in the management plans submitted with the Application, such as the Framework CEMP [EN010142/APP/7.8(Rev01)], Framework CTMP [EN010142/APP/7.11(Rev02)], Framework LEMP [EN010142/APP/7.17(Rev02)], Framework OEMP [EN010142/APP/7.9(Rev01)], and Framework DEMP [EN010142/APP/7.10(Rev01)], while a comprehensive list of mitigation measures proposed can be found in the Environmental Mitigation and Commitments Register [APP-205]. The implementation of the management plans containing the Applicant's mitigation proposals is secured by the Applicant's draft DCO [EN010142/APP/3.1(Rev03)]. With these measures in place, the Applicant does not believe any compensation payments to be necessary. The Applicant does recognise that the construction and operation of large-scale infrastructure projects such as the Scheme can be disruptive to communities and is therefore proposing a package of community benefits should the Scheme receive development consent. The Applicant intends for this package to be administered through a partnership with the Lincolnshire and Nottinghamshire community foundations. The quantum and terms of this package will be set and publicised closer to the time of construction (should the Scheme receive development consent).</p>

Scheme Design and Site Selection

Table 2-22: Applicants Responses to Public Relevant Representations relating to the Scheme Design and Site Selection

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-189, RR-170, RR-301, RR-006, RR-128, RR-232, RR-282, RR-100, RR-143, RR-009, RR-227, RR-003	Solar generation in England	Concerns relating to the reliability of solar generation in light of the limited sunshine generation in England.	<p>While Lincolnshire's solar irradiation is lower than in Southern Europe, it remains comparable to the rest of Europe. Paragraph 4.5.4 of Chapter 4 Alternatives and Design Evolution of the Environmental Statement [APP-035] sets out that irradiation was a consideration when selecting the Site, with the Site for the Scheme chosen due to its location in the east of England because of high levels of irradiation.</p> <p>Additionally, modern solar panels can generate power when levels of irradiation are lower, and technology continues to improve, making solar energy a reliable and valuable energy source in the region.</p>
RR-184, RR-282, RR-253, RR-037,	Energy production	Concern that energy produced will be at its maximum when demand is lower.	While solar panels generate energy primarily during daylight hours, Battery Energy Storage Systems (BESS), such as the one proposed for the Scheme, store excess energy for use during the night. Additionally, long-term energy

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-067, RR-198, RR-118, RR-003, RR-261, RR-077, RR-073, RR-222, RR-296, RR-310, RR-233, RR-142, RR-227		Concern that solar panels will not produce electricity during the night and in winter and therefore no power will be available when it is needed	storage solutions and grid integration ensure that energy is available throughout winter. Combining solar with other renewable sources and effective grid management strategies helps balance supply and demand, ensuring a reliable energy supply year-round.
RR-105, RR-006, RR-010, RR-017, RR-282, RR-025, RR-138, RR-227, RR-281, RR-079, RR-301, RR-232, RR-217, RR-271, RR-240, RR-100, RR-037, RR-046, RR-067, RR-088, RR-180, RR-198, RR-312, RR-118, RR-288, RR-330, RR-003, RR-261, RR-185, RR-010, RR-128, RR-073, RR-296, RR-286, RR-143, RR-281	Efficiency of solar	Concerns about the efficiency of Solar technology	Solar technology has made significant advancements, with modern panels achieving high efficiency rates and continual improvements in performance. While efficiency varies by technology and conditions, solar panels are designed to maximise energy production even in less-than-ideal conditions, such as local weather conditions. Innovations in panel design and materials continue to enhance efficiency, making solar power a viable and effective renewable energy source.
RR-227, RR-112	Lifetime of the Scheme	Concern that the Scheme is not 'temporary'.	<p>The vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following decommissioning of the Scheme. Decommissioning of the Scheme after 60 years is required and secured by Requirement 20 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)]. The Scheme is therefore a long-term temporary use.</p> <p>The temporary and reversible nature of a solar NSIP with 60 year consent has also been acknowledged in the Secretary of State's decisions on Gate Burton Energy Park and Cottam Solar Project, which have both been approved.</p> <p>NPS EN-3 (Ref 1-18) also supports this position at paragraph 2.10.66 which states that: "<i>time limited consent, where granted, is described as temporary because there is a finite period for which it exists, after which the project would cease to have consent and therefore must seek to extend the period of consent or be decommissioned and removed.</i>"</p>
RR-253, RR-128, RR-222, RR-310	Storage of electricity	Concerns over sufficient provision for storage of electricity.	The Scheme includes a storage system designed for several hours of capacity, not just short-term load balancing. This significant storage scale is crucial for maintaining grid stability and ensuring reliable energy supply.
RR-025, RR-138	Impacts on the River Trent	Concern about the implications of the Cable Route Corridor crossing the River Trent.	The proposed impact of crossing the River Trent is anticipated to be minimal as a trenchless crossing at depth (5m minimum and 25m maximum) is proposed to ensure that any settlement from drilling under the River Trent does not adversely affect the riverbed as set out in Framework CEMP [EN010142/APP/7.8(Rev01)] and secured by the Applicant's draft DCO [EN010142/APP/3.1(Rev03)] . Consultation with the Canal & River Trust, the Environment

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>Agency and Natural England has been undertaken and design proposals agreed to ensure the integrity of the River Trent is protected and future proofed. The Applicant's Statements of Common Ground with these stakeholders (Statement of Common Ground with the Canal and River Trust [EN010142/APP/9.20], Statement of Common Ground with the Environment Agency [EN010142/APP/9.17] and Statement of Common Ground with Natural England [EN010142/APP/9.19]) are submitted at Deadline 1.</p>
<p>RR-075, RR-024, RR-044, RR-184, RR-198, RR-003, RR-116, RR-010, RR-137, RR-222, RR-271, RR-058, RR-026, RR-067, RR-306, RR-330, RR-301, RR-064, RR-101, RR-185, RR-006, RR-007, RR-053, RR-124, RR-126, RR-162, RR-042, RR-279, RR-147, RR-282, RR-223, RR-058, RR-106, RR-133, RR-310, RR-264, RR-309, RR-321, RR-199, RR-289, RR-314, RR-025, RR-127, RR-138, RR-174, RR-227, RR-320</p>	<p>Scale</p>	<p>Concerns relating to the size and scale of the Scheme.</p>	<p>The Government has identified through its energy policy, most recently in the NPS EN-1 (Ref 1-17) and NPS EN-3 (Ref 1-18), that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p> <p>It is important that the electrical grid is supported by both intermittent generation sources (e.g. solar/wind) and fast-response generation sources (i.e. gas fired turbines). In the Government report on decarbonising the electricity sector (Business, Energy and Industrial Strategy Committee, 2023 (Ref 1-38)), a total of 70 GW of solar energy capacity is targeted by 2035 (currently the UK is at 16 GW), a proportion of which is intended to be supplied by the Scheme.</p> <p>Paragraph 2.10.17 of NPS EN-3 (Ref 1-18) states that a solar farm requires between 2 to 4 acres of each MW of output but acknowledges that this will vary "<i>with some being larger and some being smaller.</i>" The Scheme as based on the Indicative Principal Site Layout Plan (Figure 3-1 the Environmental Statement [AS-055] (the principles of which are secured through the Works Plans [EN010142/APP/2.3(Rev02)], Framework LEMP [EN010142/APP/7.17(Rev02)] and Outline Design Principles Statement [AS-058] would amount to a scale and density of development at 3.65 acres per MW. This being in the range considered acceptable by NPS EN-3 (Ref 1-18).</p>
<p>RR-003, RR-116, RR-282, RR-155</p>	<p>Location of the Scheme</p>	<p>Comments on why this part of Lincolnshire has been chosen for so many solar projects.</p>	<p>Section 4.5 of Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035] sets out the methodology adopted for the site selection process for the Principal Site. The Principal Site for the Scheme was chosen following a five stage process from the determination of an initial search area which demonstrates that land was identified for the Principal Site within an area of good solar irradiance (sunlight) and the identification of relatively low lying and flat topography landscape to maximise energy generation within the east of England. The characteristics of the land in this part of Lincolnshire are optimal for the generation of renewable energy by solar PV.</p> <p>From this baseline, a Point of Connection search was then undertaken by the Applicant, leading to a point of connection at the National Grid Cottam Substation. The search area was then refined through the application of exclusionary criteria based upon environmental and planning constraints. The availability and suitability of previously developed land was also considered. From this stage, potential development zones were identified as shown in Figure 4-3 of the Environmental Statement [APP-146]. Each of the zones were then evaluated against potential impacts associated with ecology and biodiversity, landscape and visual, land use, cultural heritage, access, field shading, deliverability of grid connection and terrain. This concluded that all zones performed well against the criteria, and would be suitable for the Scheme, albeit with some zones more constrained than others. The least constrained zone (Zone A) was recommended for further consideration as the preferred location for the</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>Scheme. This zone included land to the east and south-east of Gainsborough, which the Principal Site is located within.</p> <p>Zone A as shown in Figure 4-3 of the Environmental Statement [APP-146] contains land in which the Cottam Solar Project is located alongside the Tillbridge Solar Project. Gate Burton Energy Park and the West Burton Solar Project fall within Zone B. As mentioned above, the site selection process confirmed that Zones A and B were suitable for large scale solar projects. However, it was considered that Zone B was relatively more constrained than Zone A in terms of comprising more undulating land and containing more settlements and therefore receptors to be considered as part of the design process. On this basis, Zone A was the preferred zone used to then identify the Principal Site for the Tillbridge Solar Project. It should be noted that the site selection process for the Tillbridge Solar Project commenced in 2020, prior to the other solar projects (Gate Burton Energy Park, Cottam Solar Project and the West Burton Solar Project) being in the public domain. It is demonstrated that through these projects subsequently coming forward that the land falling within both Zones A and B of the Tillbridge site selection report (Figure 4-3) of the Environmental Statement [APP-146] are suitable for large scale solar projects.</p>
<p>RR-118, RR-244, RR-254, RR-326, RR-330, RR-003, RR-105, RR-006, RR-302, RR-071, RR-235, RR-188, RR-232, RR-230, RR-077, RR-047, RR-173, RR-010, RR-074, RR-084, RR-119, RR-126, RR-128, RR-162, RR-231, RR-249, RR-267, RR-294, RR-300, RR-030, RR-222, RR-269, RR-271, RR-031, RR-147, RR-282, RR-153, RR-220, RR-058, RR-106, RR-193, RR-304, RR-156, RR-280, RR-182, RR-236, RR-032, RR-196, RR-323, RR-266, RR-008, RR-020, RR-146, RR268, RR-150, RR-050, RR-012, RR-015, RR-028, RR-110, RR-114, RR-145, RR-160, RR-213,</p>	<p>Consideration of alternatives</p>	<p>Concerns regarding the consideration of design, location and technology alternatives. In particular, reference to the development being better suited to an industrial area, on existing infrastructure e.g. homes, brownfield sites, on areas where there are existing wind farms or on floodplains.</p>	<p>The Applicant has set out its rationale for selecting the Principal Site and Cable Route Corridor in Chapter 4: Alternatives and Design Evolution of the Environmental Statement [APP-035]. This explains the stages and the main considerations which have influenced the Applicant in how it has selected the land for the Scheme. For the Principal Site this has included seeking to avoid environmental and land use constraints and taking into consideration other criteria such as network connection; topography; field pattern and arrangement; land use conflict, as well as land availability. This process has continued through design evolution of the Scheme, which has sought to locate elements of the Scheme appropriately across the Principal Site to avoid impacts.</p> <p>In accordance with NPS EN-1 (Ref 1-17) paragraph 5.11.3 and NPS EN-3 (Ref 1-18) paragraph 3.10.14, the Applicant considered the availability of brownfield land within range of the point of connection. The brownfield land that was identified was less than 5ha in size or already allocated for other uses within the adopted or emerging local plan at the time of the search. Therefore it was concluded that there was insufficient, suitable brownfield land for the Scheme.</p> <p>The Applicant has also taken a sequential approach to the use of agricultural land considering whether land of lower grade is available and suitable. Following the identification of an area of search derived from the point of connection at the National Grid Cottam Substation, the Applicant did not identify any alternative sites which would be of lower grade agricultural land (compared to the majority of the Order limits) that were available or considered suitable for the Scheme and its objectives.</p> <p>In terms of locating solar on floodplains, as set out in paragraph 5.8.6 of NPS EN-1 (Ref 1-17), the aims of planning policy on development and flood risk are to steer new development to areas with the lowest risk of flooding, and strongly pushes developers to provide evidence that there are no reasonably available sites in areas at lower risk. As such, a sequential approach has been applied in selecting the land for the Scheme and to the layout and design of the Principal Site. This approach has resulted in the majority of the Order limits being within an area at a low risk of flooding from all sources.</p> <p>The Cable Route Corridor has been designed in collaboration with the developers of Cottam Solar Project, Gate Burton Energy Park, and West Burton Solar Project, to derive a shared Cable Route Corridor in order to minimise impacts through design.</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-265, RR-192, RR-290, RR-075, RR-112, RR-151, RR-029, RR-163, RR-195, RR-041, RR-096, RR-108, RR-125, RR-166, RR-171, RR-243, RR-257, RR-299, RR-313, RR-017, RR-040, RR-100, RR-130, RR-149, RR-176, RR-197, RR-315, RR-319, RR-009, RR-025, RR-132, RR-138, RR-140, RR-227, RR-004, RR-231			

Planning

Table 2-23: Applicants Responses to Public Relevant Representations relating to Planning

RR. Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-115, RR-271	Greenbelt	Concerns over use of Greenbelt land.	The Scheme is not located on any land that is allocated as being part of the Green belt.
RR-279, RR-116	Planning process	Concern that all solar schemes are working together to undermine the planning process.	<p>The PA 2008 (Ref 1-31) provides the legislative basis and defines the application process under which consent for NSIPs is sought. The Scheme and the other solar DCOs in the locality (Gate Burton Energy Park, Cottam and West Burton Solar Projects) are following the application process established through the PA 2008. Whilst each of the solar DCOs is considered on its own merits, each of the DCO applications have also presented a cumulative assessment with the other solar DCOs.</p> <p>Furthermore, the Scheme and other solar DCOs have worked collaboratively during design development and environmental assessments to minimise cumulative effects where possible, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures. Further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is provided in the Joint Report on the Interrelationship with other National Infrastructure projects [APP-215 to APP-217].</p>
RR-147, RR-235, RR-159, RR-191, RR-137	Net Zero aims	Concern that net zero goals are used as an excuse to build the Scheme.	The UK has committed to legally binding targets to reduce overall emissions to net zero by 2050. Planning policy and guidance (as per NPS-EN1 (Ref 1-17)) must therefore be consistent with this policy goal. The Scheme has been designed to align with both overall UK energy policies and the ambition to reduce emissions within the power sector to net zero.

RR. Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>It is important that the electrical grid is supported by both intermittent generation sources (e.g. solar/wind) and fast-response generation sources (i.e. gas fired turbines). In the Government report on decarbonising the electricity sector (Business, Energy and Industrial Strategy Committee, 2023 (Ref 1-38)), a total of 70 GW of solar energy capacity is targeted by 2035 (currently the UK is at 16 GW), a proportion of which is intended to be supplied by the Scheme.</p>
RR-270	Government aims and rooftop solar	Concern that large scale solar farms do not demonstrate Labour's intentions with our country, as affordable housing with solar panels is preferred.	<p>The Labour government is committed to transforming the UK into a clean energy superpower by 2030, through the construction of large-scale renewable energy schemes. Labour's Manifesto sets out its intentions and plans as how to deliver on their objectives, with a goal of tripling solar power energy in the UK by 2030. This Scheme aligns with Labour intentions of achieving clean energy by 2030.</p> <p>Government energy policy, which Labour has adopted with no indication of plans to change it, has identified most recently in the NPS EN-1 (Ref 1-17) and NPS EN-3 (Ref 1-18), that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p> <p>As discussed in the Statement of Need [APP-210] the Applicant recognises that smaller, decentralised solar energy generation on roof tops has an important role to play in decarbonisation, however, on its own, smaller scale solar, including rooftop solar, is not likely to deliver a sufficient total capacity at the required pace and at an affordable cost to meet the Government's targets. Whilst rooftop solar is likely to contribute to decarbonisation, large-scale solar is still an essential part of the future electricity system, that must be deployed where there is the natural resource, where land is available and suitable, and in proximity to available grid connection locations, such as the area local to the Scheme.</p>
RR-037, RR-010, RR-282, RR-199	Grid connection	<p>Concerns that the grid connection is not viable / too far away.</p> <p>Concerns that the grid connection has not yet been secured.</p>	<p>The Applicant undertook a search of available capacity within Lincolnshire County Council and Nottinghamshire County Council and following discussions with National Grid secured a Point of Connection (POC) at National Grid Cottam Substation. The location of the Order limits was therefore informed by the selection of a site within a feasible distance for connection to the available POC at Cottam and with suitable capacity for export of renewable energy generated in alignment with the capacity of that POC.</p> <p>Section 3 of the Grid Connection Statement [APP-214] confirms that the Applicant has received a grid connection offer from National Grid Electricity System Operator Limited (NGESO) to connect the Scheme to the NETS. The grid connection offer was provided by NGESO to the Applicant in January 2020. All subsequent modifications have related to the date which the Scheme would connect to the national electricity transmission network. NGET has confirmed that an existing spare bay within the National Grid Cottam Substation is currently available.</p>
RR-067, RR-071	Compliance with policy	Concern that the proposals far exceed the scale envisaged in the Government's policy papers.	<p>The Government has identified through its energy policy, most recently in NPS EN-1 (Ref 1-17) and NPS EN-3 (Ref 1-18), that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p> <p>It is important that the electrical grid is supported by both intermittent generation sources (e.g. solar/wind) and fast-response generation sources (i.e. gas fired turbines). In the Government report on decarbonising the electricity sector (Business, Energy and Industrial Strategy Committee, 2023 (Ref 1-38)), a total of 70 GW of solar energy</p>

RR. Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>capacity is targeted by 2035 (currently the UK is at 16 GW), a proportion of which is intended to be supplied by the Scheme.</p> <p>Paragraph 2.10.17 of NPS EN-3 (Ref 1-18) states that a solar farm requires between 2 to 4 acres of each MW of output but acknowledges that this will vary “with some being larger and some being smaller.” The Scheme as based on the Indicative Principal Site Layout Plan (Figure 3-1 the Environmental Statement [AS-055] (the principles of which are secured through the Works Plans [EN010142/APP/2.3(Rev02)], Framework LEMP [EN010142/APP/7.17(Rev02)] and Outline Design Principles Statement [AS-058] would amount to a scale and density of development at 3.65 acres per MW. This being in the range considered acceptable by NPS EN-3 (Ref 1-18).</p>
RR-009, RR-087, RR-2227, RR-282, RR-175	Planning balance	Concerns that the benefits of the scheme do not outweigh the costs.	<p>As demonstrated in Section 6 and 7 of the Planning Statement [AS-029], the key adverse impacts of the Scheme relate to significant effects upon landscape character due to the change in use of the land, localised landscape and visual impacts being relatively limited and local in nature, and less than substantial harm at the lower end of the spectrum to designated heritage assets. The design development of the Scheme has followed the mitigation hierarchy and all residual effects have been reduced as far as practicable through good design.</p> <p>Paragraph 4.2.15 of NPS-EN1 (Ref 1-17) makes it clear that for non-HRA impacts, such as the case here, that “<i>the residual impacts are unlikely to outweigh the urgent need for this type of infrastructure</i>” and that “<i>in all but the most exceptional circumstances, it is unlikely that consent will be refused on the basis of these residual impacts</i>”.</p> <p>In this case, it is very clear that the extent and nature of the residual impacts do not trigger the exceptional circumstance set out in national planning policy to refuse consent with the presumption firmly engaged in favour of granting development consent, to deliver CNP infrastructure. By contrast, the benefits of the Scheme are very substantial (in terms of climate change) and significant (in terms of ecology and nature conservation) at both a national, regional and local level, leading to an overwhelming balance in favour of granting development consent for the Scheme. In terms of S104(7) of the PA 2008, the benefits of the Scheme clearly and decisively outweigh its limited and localised adverse impacts.</p>
RR-271, RR-043	Local policy compliance	Concern that the Scheme is contrary to local plan policies.	<p>Appendix B of the Planning Statement [AS-029] provides an assessment of the Scheme against local planning policy. Table 2 sets out how the Scheme accords with the Central Lincolnshire Local Plan (Ref 1-29) and Table 14 sets out how the Scheme accords with policies in the relevant Local Plans and neighbourhood plans.</p> <p>However, it is noted that the Local Plans for Lincolnshire, West Lindsey, Bassetlaw and Nottinghamshire do not provide the primary framework for assessing large-scale solar developments. The Scheme comprises a generating station with a capacity of more than 50MW. As such, the Scheme is defined as a National Significant Infrastructure Project (NSIP) under Section 14(1)(a) and 15(2)(c) of the PA 2008 (Ref 1-31). This means that development consent is required for the Scheme and in deciding the Application, in accordance with Section 104(2) of the PA 2008. This confirms that the primary policy consideration for the assessment of NSIPs is relevant national policy statement, which in this case are the adopted Energy National Policy Statements.</p> <p>In accordance with Section 104(2)(b) of the PA 2008, the Secretary of State will also have regard to any Local Impact Report and under Section 104(2)(d) of the PA 2008, to any other important or relevant matters. The Local Impact Report, submitted at Deadline 1, will enable the relevant local planning authorities to submit a report setting out its views on local issues with reference to the adopted Central Lincolnshire Local Plan (Ref 1-29) and relevant made Neighbourhood Plans.</p>

RR. Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-199, RR-116, RR-119	Planning process	Comments that all the schemes should be assessed as one in the planning process.	<p>Whilst each of the solar DCOs is considered on its own merits, given each are brought forward as separate projects by different developers, each of the DCO applications has also presented a cumulative assessment with the other solar DCOs in order to assess their impact "as one", and those cumulative assessments have been considered by the Secretary of State in deciding whether to grant consent for the schemes consented to date. The Applicant's cumulative effects assessment is presented within Chapter 18: Cumulative Effects and Interactions of the Environmental Statement [APP-049].</p> <p>Furthermore, the Scheme and other solar DCOs have worked collaboratively during design development and environmental assessments, including identification of a shared Cable Route Corridor, sharing baseline environment information and identification of shared mitigation measures. Further information on cumulative effects, mitigation and the approach taken to coordinate with the other solar DCOs is provided in the Joint Report on the Interrelationship with other National Infrastructure projects [APP-215 to APP-217].</p>
RR-248, RR-281, RR-118, RR-235, RR-077, RR-137, RR-258, RR-153, RR-183	Need for the Scheme and energy security	Concern about the Need for the Scheme and Energy Security	<p>The Government has identified through its energy policy, most recently in the NPS EN-1 (Ref 1-17) and NPS EN-3 (Ref 1-18), that there is a critical national priority (CNP) for the provision of nationally significant low carbon infrastructure in the UK. As discussed in the Applicant's Statement of Need [APP-210], this includes low carbon energy generation using solar technology. Developing the Scheme at its proposed size will therefore be an important contribution to meeting this need.</p> <p>The Scheme, as a leading large-scale solar development in the UK, represents approximately 2% of the additional solar generation capacity required in the National Grid Energy Systems Operator's Future Energy Scenarios (FES) projections to 2030, for scenarios compatible with net zero only. In this context, the Scheme is therefore an essential stepping stone towards the future of efficient decarbonisation in the UK through the deployment of large-scale, technologically and geographically diverse low carbon generation assets.</p> <p>Growth in solar capacity, alongside other renewable technologies, is expected to improve the dependability of those assets as a combined portfolio, and this is expected to reduce further any integration costs associated with such growth.</p> <p>The Statement of Need [APP-210] states that the energy generated by the operation of the Scheme will make a positive contribution to the UK's energy security needs and the decarbonisation needs of the UK.</p>
RR-134, RR-122, RR-332, RR-277, RR-168	Support for Scheme	General support for the Scheme.	The Applicant notes the comments and thanks the Interested Parties for their support.

Funding

Table 2-24: Applicants Responses to Public Relevant Representations relating to Funding

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-116	Benefits to local residents	Requests for tangible benefit to local residents impacted.	The Applicant is proposing a community benefits package as part of the Scheme. The intention is that this will be delivered in cooperation with the Lincolnshire and Nottinghamshire community foundations.

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>The Applicant believes those communities living closest to the Scheme should benefit from it – with these communities being best placed to recommend what a 'community-benefit' should be. Suggestions to date have included funding towards improvements to existing community facilities, such as village halls and sports facilities, provision of electrical vehicle charging points, subsidised solar PV panels for community use and lower cost energy, grants for broadband and wider improvements, educational visits and wider education/apprenticeship opportunities.</p> <p>The Applicant is currently investigating how a community benefit fund could be managed and delivered independently. One way of doing this is by appointing a community foundation who would independently manage the fund. The Applicant has spoken with Lincolnshire Community Foundation and Nottinghamshire Community Foundation, who would be able to use their local knowledge and experience to identify funding opportunities and help maximise benefits for local communities. A community benefit fund would only operate if the Scheme received development consent. The Applicant recognises that other funds could also be active from other developers and is therefore considering the possibility of coordinating on these localised benefits.</p>

Safety

Table 2-25: Applicants Responses to Public Relevant Representations relating to Safety

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-125, RR-024, RR-158, RR-198, RR-116, RR-038, RR-071, RR-235, RR-282, RR-133, RR-175, RR-025, RR-138, RR-227, RR-143	Risk of fire	Concerns regarding the risk of fire from batteries and other equipment. General concerns related to the safety of lithium battery storage.	<p>As set out within Table 1 of the Outline Design Principles Statement [AS-058], the distance of BESS to residential areas and commercial properties has been carefully considered to minimise operational or incident impacts on receptors and there will be no BESS within 250m of residential properties.</p> <p>A Framework Battery Safety Management Plan (BSMP) [APP-225] has been prepared with input from local Fire and Rescue Services alongside this Application; this provides mitigation and management measures for thermal runaway safety risks posed by the BESS in the Scheme. In accordance with the Framework BSMP [APP-225], the detailed design phase of individual BESS sites will consider the lifecycle of the battery system from installation to decommissioning (including transportation). At the detailed design stage, risk assessment tools will be utilised together with detailed consequence modelling to provide a comprehensive site operations and emergency response safety audit.</p> <p>At the time of installation, the Applicant will work closely with the Fire and Rescue Service to provide all relevant information on BESS and site design features to inform all necessary hazard and risk analysis studies and assist in the development of comprehensive Risk Management (RM) and Emergency Response Plans (ERP).</p> <p>This will include embedded design features to manage emergency scenarios such as fires should they arise, including dedicated fire water storage tanks and/or hydrants.</p>
RR-125, RR-024, RR-158, RR-038, RR-227	Fire mitigation	Concerns that there is no way to prevent the spread of fire or put out battery fires	<p>A Framework BSMP [APP-225] has been prepared with input from Lincolnshire Fire and Rescue Service alongside the Application which provides mitigation and management measures for thermal runaway safety risks posed by the BESS in the Scheme.</p> <p>The detailed design phase of individual BESS sites will consider the lifecycle of the battery system from installation to decommissioning. At the detailed design stage, risk assessment tools will be utilised together with detailed consequence modelling to provide a comprehensive site operations and emergency response safety audit.</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-125, RR-198, RR-038, RR-024, RR-282, RR-133	Chemical leaks	Concerns regarding the associated risk of chemical leaks / toxicity if the equipment were to catch fire.	<p>At the time of installation, the Applicant will work closely with the Fire and Rescue Service to provide all relevant information on BESS and site design features to inform all necessary hazard and risk analysis studies and assist in the development of comprehensive Risk Management (RM) and Emergency Response Plans (ERP).</p> <p>A Framework BSMP [APP-225] has been prepared with input from Lincolnshire Fire and Rescue Service alongside the Application which provides mitigation and management measures for thermal runaway safety risks and general fire safety risks posed by the BESS utilised in the Scheme.</p> <p>The Applicant has provided an assessment of the effects of an unplanned fire relating to the proposed BESS. This can be found in Appendix 17-5: Unplanned Atmospheric Emissions from BESS of the Environmental Statement [APP-123]. The assessment demonstrates that in the unlikely event of a fire, after 200m the atmospheric emissions of hydrogen fluoride from the BESS would be below acute exposure guideline levels and therefore, would not result in a significant effect on human health.</p> <p>At the time of installation, the Applicant will work closely with the Fire and Rescue Service to provide all relevant information on BESS and site design features to inform all necessary hazard and risk analysis studies and assist in the development of comprehensive Risk Management (RM) and Emergency Response Plans (ERP). This will include embedded design features to manage emergency scenarios such as fires should they arise, including dedicated fire water storage tanks and/ or hydrants.</p> <p>The design principles for the BESS set out within Table 1 of the Outline Design Principles Statement [AS-058] state that there will be no BESS within 250m of residential properties.</p>
RR-170	Security	Concerns over potential technology unknowingly inserted into solar panels to spy on residents.	<p>The Scheme has sought to avoid proximity to villages and residential properties in line with the provisions of NPS EN-3 (Ref 1-18). Buffers from residential properties of at least 30 m have been incorporated into the Scheme. During operation, permanent security lights with motion detectors will be used for security purposes around the electrical infrastructure, emergency access points to facilities within the Scheme and potentially at other sites of critical infrastructure (i.e. not proposing on-site staff to patrol the fences in proximity to residential properties), in order to prevent crime.</p> <p>Closed CCTV systems would be internal facing around the perimeter of the operational areas of the Principal Site. These measures are described in Chapter 3: Scheme Description of the Environmental Statement [AS-053], as well as the Framework LEMP [APP-EN010142/APP/7.17(Rev02)], Framework CEMP [EN010142/APP/7.8(Rev01)], Framework OEMP [EN010142/APP/7.9(Rev01)] and Framework DEMP [EN010142/APP/7.10(Rev01)]. These documents will inform detailed LEMP, CEMP, OEMP and DEMP, respectively, as secured by the relevant requirements in Schedule 2 of the Draft Development Consent Order [EN010142/APP/3.1(Rev03)] relating to the preparation and approval of the detailed management plans.</p> <p>Robust security protocols and regular audits are implemented to mitigate the risk of any third parties tampering with the Scheme equipment and ensure its integrity.</p>
RR-198	Water use	Concerns relating to amount of water required to put out battery fires.	<p>Firefighting water will be provided on-site in line with National Fire Chiefs Council (NFCC) guidelines (Ref 1-11). Detail of the firefighting water measures to be incorporated within the Scheme design are set out in Table 2-1 of the Framework BSMP [APP-225].</p> <p>The BESS areas will be designed to integrate pressure fed fire hydrants and/or static water tanks for firefighting. The water held within these tanks will be sourced externally and transported to the Principal Site to ensure a consistent onsite water supply.</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-116, RR-038, RR-025, RR-138, RR-227	Battery safety	Safety concerns due to proximity of batteries to homes and schools.	<p>NFCC guidance has been followed in the drafting of the Framework BSMP [APP-225]. At the detailed design stage, site water supply for internal Fire Suppression Systems (if integrated) and external boundary cooling will be verified by an independent Fire Protection Engineer and agreed with the Lincolnshire Fire and Rescue Service, as per NFCC guidelines. These measures are also included in the Framework BSMP [APP-225].</p> <p>As set out within the Framework BSMP [APP-225], the sizing and placement of the batteries will be carefully planned to meet both local and national fire safety regulations. The distance between the BESS and residential areas, including homes and schools, complies with established safety guidelines to minimise risk. Additionally, the Framework BSMP [APP-225] outlines procedures to ensure that, in case of an emergency, the Lincolnshire Fire and Rescue Service can respond efficiently and effectively.</p> <p>As set out within the Outline Design Principles Statement [AS-058], the distance of BESS to residential areas and commercial properties has been carefully considered to minimise operational or incident impacts on receptors and there will be no BESS within 250m of residential properties. There are also no schools within 250m of any BESS.</p> <p>NFPA 855 (2023) (Ref 1-44) defines basic operation H&S protocols for all BESS site designs which should be incorporated into emergency response plans (ERP):</p> <ul style="list-style-type: none"> • Potential debris impact radius is defined as 100 feet / 30.5 metres, i.e. this is a typical explosion risk safe exclusion zone radius as modelling and previous BESS incidents typically show 25 metres to be maximum radius. • Automatic building evacuation area is defined as 200 feet / 61 metres from the affected BESS container. <p>BESS design and site layout will minimise the requirement for direct Lincolnshire Fire and Rescue Service intervention in the unlikely event of a thermal runaway incident i.e., direct hose streams or spray directly on BESS battery systems. Instead, firefighting intervention in worst case scenarios would ideally be limited to boundary cooling of adjacent BESS units to prevent the fire from spreading whilst minimising any water pollution risks. This strategy will be finalised with the Lincolnshire Fire and Rescue and be clearly communicated in the ERP.</p> <p>The detailed design phase of the BESS will consider the lifecycle of the battery system from installation to decommissioning. At the detailed design stage, risk assessment tools will be utilised together with detailed consequence modelling to provide a comprehensive site operations and emergency response safety audit.</p>
RR-065, RR-282, RR-025, RR-015, RR-138	Crime	Concerns that equipment will lead to increased levels of crime and sabotage.	<p>The Scheme incorporates fencing which will mitigate against the risk of criminal activity. During operation, permanent security lights with motion detectors will be used for security purposes around the electrical infrastructure, emergency access points to facilities within the Scheme and potentially at other sites of critical infrastructure. Forms of security which are more intrusive to residents are not however proposed (i.e. not proposing on-site staff to patrol the fences in proximity to residential properties). Internal facing closed circuit television (CCTV) systems also proposed. These will be installed around the perimeter of the operational areas of the Solar PV Site. These measures are described within the Outline Design Principles Statement [AS-058], which will be secured by requirement 5 in Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p>
RR-227	Regulation of batteries	Concerns relating to lack of regulation of batteries.	<p>The battery systems used in the Scheme are subject to stringent regulation and oversight to ensure safety and performance. These regulations cover design, installation, operation, and maintenance, and are enforced by manufacturers, constructors, operators, and both local and national authorities.</p> <p>The Framework Battery Safety Management Plan (BSMP) [APP-225] adheres to these regulations and incorporates best practices for monitoring and emergency response. This thorough approach guarantees that all battery systems</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
			<p>operate safely and efficiently, in compliance with established regulatory requirements that are under constant revision and improvement.</p> <p>The Applicant continues to consider current and emerging guidance in respect of BESS fire safety controls. The Applicant has been engaging with the Council and the Lincolnshire Fire and Rescue Service over the past several months to ensure their requirements are addressed.</p> <p>The Applicant will be updating the Framework BSMP [APP-225] and will submit it during the Examination to reflect the latest National Fire Chief Council's guidance and has amended design parameters within the Outline Design Principles Statement [AS-058]. This will ensure that the Scheme incorporates latest guidance delivering an optimum design solution with respect to fire safety.</p> <p>The draft DCO [EN010142/APP/3.1(Rev03)] will ensure that the outline principles are secured during implementation. This is through requirement 6 of Schedule 2 of the draft DCO, which requires the submission and approval of a battery safety management plan (BSMP) by the relevant planning authority. The BSMP must be substantially in accordance with the Framework BSMP and the BSMP implemented as approved. Compliance with the Outline Design Principles Statement [AS-058] is secured through Requirement 5 of Schedule 2 of the draft DCO [EN010142/APP/3.1(Rev03)].</p> <p>Lincolnshire County Council's Relevant Representation acknowledges that "<i>The Framework Battery Safety Management Plan appears to capture all of the details discussed during the engagement meetings</i>" and reflects current guidance.</p> <p>The Applicant has also agreed to a programme for monitoring and assessment of the Scheme once constructed to ensure the Lincolnshire Fire and Rescue service is satisfied the Battery Safety Management Plan has been properly implemented, as requested by this representation, within the protective provisions at Part 8 of Schedule 15 of the draft DCO [EN010142/APP/3.1(Rev03)]. This includes commitments to provide a financial contribution to the Fire and Rescue Service so that it can undertake this monitoring and assessment, at clause 94 of those protective provisions.</p>

Consultation and Engagement

Table 2-26: Applicants Responses to Public Relevant Representations relating to Consultation and Engagement

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-006	Consistency of information	Concern over aspects of Scheme / facts changing since the proposals first surfaced.	<p>The Planning Inspectorate, upon receipt of the DCO Application, was required to consider whether the Applicant had consulted adequately and in accordance with legislative requirements. To assist in that determination the Planning Inspectorate invited the local authorities to submit an adequacy of consultation response. The acceptance of the Application for examination confirms that it is considered that adequate and compliance consultation has been undertaken.</p> <p>The Applicant adopted a two-stage approach to its pre-application consultation. This consisted of an initial non-statutory consultation exercise which informed the development of the Scheme, followed by a continued period of non-statutory engagement leading up to a second stage of consultation - statutory consultation - which was delivered in accordance with the requirements of the PA 2008 (Ref 1-31).</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-003, RR-121, RR-269, RR-133, RR-100, RR-227	Adequacy of consultation	Concern over lack of consultation and engagement with public / landowners over proposals.	<p>Throughout the design development process, the Scheme design has been continually refined in response to community and stakeholder engagement, such as through multiple rounds of community consultation on the proposals, collaboration workshops and meetings with neighbouring properties. The Scheme has also been developed to include measures to minimise impacts upon residents and nearby communities, respond sensitively to local context, such as landscape, habitats, wildlife and heritage, and provide landscape and ecological enhancement measures. The Applicant considers this iterative approach of design adjustments in response to consultation was critical to ensuring a Scheme which is appropriate for its context and reflects the inputs of local communities.</p> <p>The Planning Inspectorate, upon receipt of the DCO Application, was required to consider whether the Applicant had consulted adequately and in accordance with legislative requirements. To assist in that determination the Planning Inspectorate invited the local authorities to submit an adequacy of consultation response. The acceptance of the Application for examination confirms that it is considered that adequate and compliance consultation has been undertaken.</p> <p>The Applicant adopted a two-stage approach to its pre-application consultation. This consisted of an initial non-statutory consultation exercise which informed the development of the Scheme, followed by a continued period of non-statutory engagement leading up to a second stage of consultation - statutory consultation - which was delivered in accordance with the requirements of the PA 2008 (Ref 1-31).</p> <p>The Applicant carried out the statutory consultation in accordance with its obligations set out in the PA 2008. The Applicant consulted at an appropriate time in the Scheme's development and clearly set out its current proposals and the aspects upon which it was seeking feedback.</p> <p>Throughout the design development process, the Scheme design has been continually refined in response to community and stakeholder engagement, such as through multiple rounds of community consultation on the proposals, collaboration workshops and meetings with neighbouring properties. The Scheme has also been developed to include measures to minimise impacts upon residents and nearby communities, respond sensitively to local context, such as landscape, habitats, wildlife and heritage, and provide landscape and ecological enhancement measures. The Applicant considers this iterative approach of design adjustments in response to consultation was critical to ensuring a Scheme which is appropriate for its context and reflects the inputs of local communities.</p> <p>Further information on the Applicant's approach to consultation can be found in the Consultation Report [APP-021] and its appendices [APP-022 to APP-030].</p>
RR-250	Adequacy of consultation	Comment that locals are not being listened to.	<p>The Applicant has complied with the PA 2008 in carrying out the Statutory Consultation, ensuring that consultees had an opportunity to comment on the proposals. The Applicant carefully had regard to those comments during the Scheme's development before the application for development consent in accordance with the obligations outlined under section 49 of the PA 2008 (Ref 1-31).</p> <p>Views expressed by consultees have made a difference to the Scheme, with a summary of all comments received and changes are presented in section 10 of the Consultation Report [APP-021] and its appendices [APP-022 to APP-030].</p> <p>The Applicant adopted a two-stage approach to its pre-application consultation. This consisted of an initial non-statutory consultation exercise which informed the development of the Scheme, followed by a continued period of non-statutory engagement leading up to a second stage of consultation - statutory consultation - which was delivered in accordance with the requirements of the PA 2008 (Ref 1-31).</p>

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-025, RR-138	Consultation area	Comment that consultation should have been undertaken over a wider area.	<p>Throughout the design development process, the Scheme design has been continually refined in response to community and stakeholder engagement, such as through multiple rounds of community consultation on the proposals, collaboration workshops and meetings with neighbouring properties. The Scheme has also been developed to include measures to minimise impacts upon residents and nearby communities, respond sensitively to local context, such as landscape, habitats, wildlife and heritage, and provide landscape and ecological enhancement measures. The Applicant considers this iterative approach of design adjustments in response to consultation was critical to ensuring a Scheme which is appropriate for its context and reflects the inputs of local communities.</p> <p>Section 47(1) of the PA 2008 (Ref 1-31) requires the Applicant to prepare a statement setting out how it proposes to consult on the proposed application with people living in 'vicinity' of the land to which the Scheme relates.</p> <p>The Applicant identified a Primary Consultation Zone (PCZ) to help determine the areas where consultation would take place; taking into consideration where the Scheme may have a direct or indirect impact, either permanently or temporarily, as a result of construction, operation (including maintenance) or decommissioning.</p> <p>The definition of the PCZ was included in the draft Statement of Community Consultation (SoCC) and commented on by local authorities. In response to feedback submitted by Bassetlaw District Council as part of the informal consultation undertaken on the draft SoCC, the Applicant updated the proposed PCZ to accommodate the request that the communities of North Leverton, South Leverton, and Treswell were included.</p> <p>The Applicant defined the PCZ by initially extending a minimum distance of two kilometres from the boundary of the Principal Site – within which the solar PV panels, battery energy storage systems, on-site substation and supporting infrastructure would be located. The PCZ also extended one kilometre from the edge of the Cable Route Corridor. The Applicant considered the following factors when setting out the PCZ:</p> <ul style="list-style-type: none"> • The zone of theoretical visibility for the Scheme, which assesses areas in vicinity of the Scheme boundary which could experience a degree of visual impact; • Existing natural and human geographic boundaries, such as main roads; • Capturing entire communities, rather than excluding small numbers of properties; • Coverage of the host district council wards and parishes; and • Where the Applicant proposes to undertake additional works to enable construction transport, equipment areas or road modifications. <p>The PCZ was extended further where proportionate and reasonable based on existing boundaries in order to avoid inappropriate 'severance' of communities. The PCZ is shown in Figure 5.1 of the SoCC. The SoCC is appended to the Consultation Report [APP-021 to APP-030].</p> <p>The Applicant publicised the statutory consultation beyond the PCZ, reaching out directly to community groups, seldom heard groups and using media outreach to engage people interested in the Scheme.</p> <p>The Planning Inspectorate, upon receipt of the DCO Application, was required to consider whether the Applicant had consulted adequately and in accordance with legislative requirements. To assist in that determination the Planning Inspectorate invited the local authorities to submit an adequacy of consultation response. The acceptance of the Application for examination confirms that it is considered that adequate and compliance consultation has been undertaken.</p>

Decommissioning

Table 2-27: Applicants Responses to Public Relevant Representations relating to Decommissioning

RR Ref No.	Theme	Comments from Relevant Representations	Response to Relevant Representation
RR-006, RR-271, RR-132, RR-105, RR-240, RR-043, RR-223, RR-058, RR-227, RR-071, RR-158, RR-116, RR-198, RR-120	Reinstatement of land	Concerns over reinstatement of land and environmental impact following decommissioning of the Scheme.	The vast majority of agricultural land within the Order limits would be available for return to its existing agricultural use following decommissioning of the Scheme. The Environmental Statement has assessed all environmental effects of decommissioning based on a realistic worst-case scenario approach. A Framework DEMP [EN010142/APP/7.10(Rev01)] has been produced detailing the proposed mitigation measures and how they will be implemented. It also sets out the monitoring and auditing activities designed to ensure that such mitigation measures are carried out, and that they are effective. A detailed DEMP, which must be in substantial accordance with the Framework DEMP, will need to be agreed with the Local Planning Authority prior to decommissioning, and this is secured by Requirement 20 within the draft DCO [EN010142/APP/3.1(Rev03)] .

3. References

- Ref 1-1 Natural England (2009). Agricultural Land Classification: protecting the best and most versatile agricultural land (TIN049). Accessed on 18/10/2024 at <https://publications.naturalengland.org.uk/publication/35012>
- Ref 1-2 Gate Burton Energy Park (2023). Statement of Common Ground between the Applicant and Natural England. Accessed on 18/10/2024 at <https://infrastructure.planninginspectorate.gov.uk/wpcontent/ipc/uploads/projects/EN010131/EN010131-001569-4.3c%20Final%20SoCG%20with%20Natural%20England.pdf>
- Ref 1-3 DEFRA (2008) Best Practice for Managing Soil Organic Matter in Agriculture. Accessed on 23/10/2024 at <https://randd.defra.gov.uk/ProjectDetails?ProjectId=15536>
- Ref 1-4 Institute of Quarrying (2022) Good Practice Guide for Handling Soils in Mineral Workings Accessed on 18/10/2024 at IoQ 2021 <https://www.quarrying.org/soils-guidance>
- Ref 1-5 British Standards Institute (2014). Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration. Accessed on 19/10/2024 at <https://knowledge.bsigroup.com/products/code-of-practice-for-noise-and-vibration-control-on-construction-and-open-sites-noise?version=standard>
- Ref 1-6 CL:AIRE (2023) Definition of Waste: Code of Practice. Accessed on 23/10/2024 at <https://claire.co.uk/projects-and-initiatives/dow-cop>
- Ref 1-7 IEMA Guidance and were provided in the EIA Scoping Report
- Ref 1-8 Stationary Office (2013). Waste Electrical and Electronic Equipment Regulations 2013. Accessed on 19/10/2024 at <https://www.legislation.gov.uk/ukxi/2013/3113/contents>
- Ref 1-9 Stationary Office (2009). The Waste Batteries and Accumulators Regulations 2009. Accessed on 21/10/2024 at <https://www.legislation.gov.uk/ukxi/2009/890/contents>
- Ref 1-10 Environment Agency (2021). Technical Guidance WM3: Waste Classification – Guidance on the classification and assessment of waste. Accessed on 23/10/2024 at <https://www.gov.uk/government/publications/waste-classification-technical-guidance>
- Ref 1-11 National Fire Chiefs Council (2022). Grid Scale Battery Energy Storage System Planning – Guidance for FRS. Version 1.0 November 2022. Accessed on 23/10/2024 at <https://nfcc.org.uk/wp-content/uploads/2023/10/Grid-Scale-Battery-Energy-Storage-System-planning-Guidance-for-FRS.pdf>
- Ref 1-12 British Standards Institute (2012). Trees in relation to design, demolition and construction - Recommendations. Accessed on 23/10/2024 at <https://knowledge.bsigroup.com/products/trees-in-relation-to-design-demolition-and-construction-recommendations?version=standard>
- Ref 1-13 Ministry of Housing, Communities and Local Government (2014). National Planning Policy for Waste. Accessed on 23/10/2024 at <https://www.gov.uk/government/publications/national-planning-policy-for-waste>
- Ref 1-14 IEMA (2020). Guidance methodology (IEMA Guide to: Materials and Waste in Environmental Impact Assessment. Accessed on 18/10/2024 at <https://www.iema.net/content/materials-and-waste-in-environmental-impact-assessment-march-2020/>
- Ref 1-15 Stationary Office (1991). New Roads and Street Works Act 1991. Accessed on 24/10/2024 at <https://www.legislation.gov.uk/ukpga/1991/22/contents>
- Ref 1-16 Lake, J & Partington, A (2015). Building the Evidence Base for Historic Farmsteads in Greater Lincolnshire. <https://doi.org/10.5284/1035172>
- Ref 1-17 Department for Energy Security and Net Zero (2024). National Policy Statement for Energy EN-1. Accessed on 23/10/2024 at <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1>
- Ref 1-18 Department for Energy Security and Net Zero (2024). National Policy Statement for Renewable Energy Infrastructure EN-3. Accessed on 23/10/2024 at <https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3>
- Ref 1-19 Lincolnshire County Council (2016). Lincolnshire Minerals and Waste Local Plan Core Strategy and Development Management Policies. Accessed on 18/10/2024 at <https://www.lincolnshire.gov.uk/directory-record/61697/minerals-and-waste-local-plan-core-strategy-and-development-management-policies>
- Ref 1-20 Department for Levelling Up, Housing and Communities. National Planning Policy Framework (NPPF) (2023). Accessed on 17/10/2024 at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>
- Ref 1-21 Department for Levelling Up, Housing and Communities. Planning Practice Guidance (PPG) (2024). Accessed on 17/10/2024 at: <https://www.gov.uk/government/collections/planning-practice-guidance>
- Ref 1-22 Department for Environment, Food and Rural Affairs (DEFRA). United Kingdom Food Security Report 2021. Accessed on 20/10/2024 at: <https://www.gov.uk/government/statistics/united-kingdom-food-security-report-2021>
- Ref 1-23 NHS England's Healthy Urban Development Unit (2019) Rapid Health Impact Assessment (HIA) Toolkit 2019. Accessed on 18/10/2024 at <https://www.healthyrbandevelopment.nhs.uk/wp-content/uploads/2019/10/HUDU-Rapid-HIA-Tool-October-2019.pdf>
- Ref 1-24 IEMA (2022) Determining Significance For Human Health In Environmental Impact Assessment. Accessed on 18/10/2024 at <https://www.iema.net/resources/blogs/2022/11/17/iema-launch-of-the-eia-guidance-for-considering-impacts-on-human-health-november-2022/>
- Ref 1-25 Lincolnshire Health Intelligence Hub (2023) Lincolnshire Joint Strategic Needs Assessment. Accessed on 18/10/2024 at <https://lhih.org.uk/jsna/>
- Ref 1-26 Lincolnshire County Council (2024) Joint Health and Wellbeing Strategy for Lincolnshire. Accessed on 18/10/2024 at <https://lhih.org.uk/joint-health-and-wellbeing-strategy/>

- Ref 1-27 International Commission on Non-Ionizing Radiation Protection (1998). ICNIRP Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz). Accessed on 21/10/2024 at <https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf>
- Ref 1-28 National Grid (2015). Undergrounding high voltage electricity transmission lines. Accessed on 23/10/2024 at: [https://www.nationalgrid.com/sites/default/files/documents/39111-Undergrounding high voltage electricity transmission lines The technical issues INT.pdf](https://www.nationalgrid.com/sites/default/files/documents/39111-Undergrounding%20high%20voltage%20electricity%20transmission%20lines%20The%20technical%20issues%20INT.pdf)
- Ref 1-29 Central Lincolnshire Joint Strategic Planning Committee (2023). Central Lincolnshire Local Plan. Accessed on 23/10/2023 at <https://www.n-kesteven.gov.uk/central-lincolnshire/adopted-local-plan-2023>
- Ref 1-30 West Lindsey District Council (2024). Sturton by Stow and Stow Neighbourhood Plan. Accessed on 23/10/2024 at <https://www.west-lindsey.gov.uk/planning-building-control/planning/neighbourhood-planning/all-neighbourhood-plans-west-lindsey/sturton-stow-stow-neighbourhood-plan>
- Ref 1-31 Stationary Office (2008). Planning Act 2008. Accessed on 22/10/2024 at <https://www.legislation.gov.uk/ukpga/2008/29/contents>
- Ref 1-32 Standards for Highways (2020). DMRB LA111 Noise and Vibration. Accessed on 23/10/2024 at <https://www.standardsforhighways.co.uk/search/cc8cfcf7-c235-4052-8d32-d5398796b364>
- Ref 1-33 Stationary Office (2010) Equality Act 2010. Accessed on 23/10/2024 at <https://www.legislation.gov.uk/ukpga/2010/15/contents>
- Ref 1-34 IEMA (2022). Assessing Greenhouse Gas Emissions and Evaluating their Significance. Accessed on 23/10/2024 at <https://www.iema.net/resources/blogs/2022/02/28/iema-launch-of-the-updated-eia-guidance-on-assessing-ghg-emissions-february-2022/#:~:text=IEMA's%20Policy%20and%20Engagement%20Lead,hierarchy%2C%20lead%20to%20reduced%20GHG>
- Ref 1-35 Stationary Office (2017). Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Accessed on 22/10/2024 at <https://www.legislation.gov.uk/uksi/2017/572/contents>
- Ref 1-36 Stationary Office (1981). Wildlife and Countryside Act 1981. Accessed on 22/10/2024 at <https://www.legislation.gov.uk/ukpga/1981/69>
- Ref 1-37 World Health Organisation (2024). Health Topics. Accessed on 23/10/2024 at <https://www.who.int/europe/health-topics/>
- Ref 1-38 Business, Energy and Industrial Strategy Committee (2023). Government report on decarbonising the electricity sector. Accessed on 23/10/2024 at <https://committees.parliament.uk/work/7258/decarbonising-the-power-sector/#:~:text=In%20October%202021%20the%20Government,to%20electricity%20to%20reduce%20emissions> .
- Ref 1-39 British Standards Institute (2014). BS 5228-1 Code of practice for noise and vibration control on construction and open sites – Noise. Accessed on 23/10/2024 at <https://knowledge.bsigroup.com/products/code-of-practice-for-noise-and-vibration-control-on-construction-and-open-sites-noise?version=standard>
- Ref 1-40 British Standards Institute (2014). BS 5228-1 Code of practice for noise and vibration control on construction and open sites – Vibration. Accessed on 23/10/2024 at <https://knowledge.bsigroup.com/products/code-of-practice-for-noise-and-vibration-control-on-construction-and-open-sites-vibration?version=standard>
- Ref 1-41 Stationary Office (1974). Control of Pollution Act 1974. Accessed on 23/10/2024 at <https://www.legislation.gov.uk/ukpga/1974/40>
- Ref 1-42 Solar Power Europe (2021) Lifecycle Quality Best Practice Guidance. Accessed on 23/10/2024 at <https://www.solarpowereurope.org/insights/thematic-reports/lifecycle-quality-best-practice-guidelines-version-1-0>
- Ref 1-43 Intergovernmental Panel on Climate Change (2023). Sixth Assessment Report. Accessed on 23/10/2024 at <https://www.ipcc.ch/assessment-report/ar6/>
- Ref 1-44 National Fire Protection Association (2023). NFPA 855 Standard Development. Accessed on 23/10/2024 at <https://www.nfpa.org/codes-and-standards/nfpa-855-standard-development/855>
- Ref 1-45 Landscape Institute. Technical Guidance Note TGN 02-21 'Assessing Landscape Value Outside National Designations'. Accessed on 23/10/2024 at: <https://www.landscapeinstitute.org/publication/tgn-02-21-assessing-landscape-value-outside-national-designations/>

Appendix A Waste Quantitative Cumulative Assessment

**Tillbridge Solar Project
EN010142**

**Applicant's Response to Relevant
Representations**

**Appendix A: Waste Quantitative Cumulative
Assessment**

Document Reference: EN010142/APP/9.1

**Planning Act 2008
The Infrastructure Planning (Examination Procedure) Rules 2010**

**October 2024
Revision Number: 00**

Table of Contents

1.	Introduction	3
2.	Study Area	3
3.	Methodology for significance assessment	4
4.	Baseline	7
4.1	Current Baseline	7
4.2	Future Baseline.....	8
4.3	Recovery and Recycling Assumptions	9
4.4	Cumulative Impacts	10
5.	References	14

Tables

Table 3-1.	Receptor Sensitivity	5
Table 3-2.	Magnitude of Impacts	6
Table 3-3.	Effects Thresholds	7
Table 3-4.	Significance Criteria.....	7
Table 4-1.	Landfill Void Capacity, 2022.....	8
Table 4-2.	Cumulative Impact Assessment Summary	11

1. Introduction

- 1.1.1 This quantitative cumulative waste assessment of the Tillbridge Solar Project ('the Scheme') has been undertaken in response to the relevant representations received from the Lincolnshire County Council and the Environment Agency.
- 1.1.2 This cumulative assessment applies the Methodology W1 from the Institute of Environmental Management & Assessment (2020) Guide to Materials and Waste in Environmental Impact Assessment (referred to hereafter as the "IEMA Guide" (Ref 1)).
- 1.1.3 This quantitative cumulative assessment is based on the approach used for the equivalent assessment completed during the Gate Burton Energy Park examination. The Lincolnshire County Council letter (Ref 2) 'Gate Burton Energy Park comments on the Applicant response to Rule 17 Request (Document Reference: EN010131/APP/8.33) (Ref 3)' raised concerns which have also been considered in the preparation of this technical note.

2. Study Area

- 2.1.1 Two study areas are defined in the IEMA Guide.
 - a. The "development study area" is the red line boundary of a proposed development, within which waste will be generated.
 - b. The "expansive study area" is the area which contains the waste facilities that could be used to manage the waste. For non-hazardous waste, this is assessed as being the East Midlands, and for hazardous waste, it is assessed as being England.
- 2.1.2 East Midlands is used for non-hazardous waste (rather than Lincolnshire or Nottinghamshire alone or in combination) recognising the fact that waste may not always be managed in the Waste Planning Authority where it is generated and may instead be managed at the regional level.
- 2.1.3 England is used for hazardous waste. The Study Area for hazardous waste management is defined based on professional judgement and informed by consideration of the proximity principle. The proximity principle for hazardous waste in England is outlined in Principle 2 – Infrastructure Provision in the Strategy for Hazardous Waste Management in England, and states "*We look to the market for the development of hazardous waste infrastructure, which implements the hierarchy for the management of hazardous waste and meets the needs of the UK to ensure that the country as a whole is self-sufficient in hazardous waste disposal, facilities are put in place for hazardous waste recovery in England, and the proximity principle is met*" (Ref 4).
- 2.1.4 The National Policy Statement for Hazardous Waste (Ref 5) includes the statement that:

The main objectives of Government policy on hazardous waste are:

...

(c) Self-sufficiency and proximity – to ensure that sufficient disposal facilities are provided in the country as a whole to match expected arisings of all hazardous wastes, except those produced in very small quantities, and to enable hazardous waste to be disposed of in one of the nearest appropriate installations;

- 2.1.5 Sections 3.3.6 and 3.3.7 of the National Policy Statement for Hazardous Waste explicitly considers the options of a broad network of small facilities (i.e. local/regional provision) or fewer larger facilities (i.e. national provision) and concludes that:

An alternative to the provision of a few major facilities to manage these wastes might be a larger number of smaller facilities. This would allow greater scope for facilities to relate to regional and local arisings and so reduce the negative impacts associated with long distance transportation. However, it would not take account of economies of scale. This is important because, for some types of hazardous waste treatment, facilities are only viable if above a certain capacity. Furthermore, as explored in the Appraisal of Sustainability (see section 7.5 of the AoS report), the cumulative effects of a number of smaller facilities may, in some cases, be larger than those for one large facility – for example more resources may be used and landtake may be larger.

...

Consequently, a small number of large facilities (i.e. with a capacity above the threshold for nationally significant hazardous waste infrastructure) are likely to be needed to meet the expected increase in arisings of hazardous waste.

- 2.1.6 The Lincolnshire County Council letter 'Gate Burton Energy Park comments on applicant response to Rule 17 Request (Document Reference: EN010131/APP/8.33)' raised concerns and suggested that hazardous waste landfill at a regional level should be considered. An assessment of hazardous waste at the regional level has not been undertaken since national policy states that the proximity principle applies to the country as a whole (rather than requiring regional provision for all hazardous waste types) and expresses a preference for a small number of larger national facilities above a network of smaller regional facilities for hazardous waste management.

3. Methodology for significance assessment

- 3.1.1 The IEMA Guide states that:

"The sensitivity of waste relates to availability of regional (and where appropriate, national) landfill void capacity in the absence of the proposed development. Landfill capacity is recognised as an unsustainable and increasingly scarce option for managing waste.

Note: In this guidance, it is considered that infrastructure that is used to process and recover arisings (and hence divert them from landfill) is a beneficiary of waste feedstock, and has the ability to reduce adverse impacts. Such facilities are therefore an influencing factor in the reduction of the

magnitude of waste impacts on landfill void capacity, rather than being a sensitive receptor in their own right.”

- 3.1.2 Hence the receptor considered is landfill void capacity. Other waste management capacity (e.g. for the recycling of PV modules) is not considered as a sensitive receptor in the IEMA Guide.
- 3.1.3 The sensitivity of receptors (i.e. landfill void capacity) is determined based on the expected change in capacity between the current time and the assessment year, using the following criteria.
- 3.1.4 It is noted that the receptor sensitivity matrix included in the IEMA Guide does not refer to decommissioning, but the below receptor sensitivities would apply to decommissioning phase assessment too.

Table 3-1. Receptor Sensitivity

Effects	Criteria for Inert and Non-Hazardous Landfill Capacity Sensitivity	Criteria for Hazardous Landfill Capacity Sensitivity
Negligible	Across construction and/or operational phases, the baseline/future baseline (i.e. without the Scheme) of regional inert and non-hazardous landfill capacity expected to remain unchanged, or is expected to increase through a committed change in capacity.	Across the construction and/or operational phases, the baseline/future baseline (i.e., without the Scheme) of regional (or where justified, national) hazardous landfill capacity is expected to remain unchanged or is expected to increase through a committed change in capacity.
Low	Across construction and/or operational phases, the baseline/future baseline (i.e., without the Scheme) of regional inert and non-hazardous landfill capacity is expected to reduce minimally by <1% as a result of wastes forecast.	Across the construction and/or operational phases, the baseline/future baseline (i.e., without the Scheme) of regional (or where justified, national) hazardous landfill capacity is expected to reduce minimally by <0.1% as a result of wastes forecast.
Medium	Across construction and/or operational phases, the baseline/future baseline (i.e., without the Scheme) of regional inert and non-hazardous landfill capacity is expected to reduce noticeably by 1-5% as a result of wastes forecast.	Across the construction and/or operational phases, the baseline/future baseline (i.e., without the Scheme) of regional (or where justified, national) hazardous landfill capacity is expected to reduce noticeably by 0.1-0.5% as a result of wastes forecast.
High	Across construction and/or operational phases, the	Across the construction and/or operational phases, the

Effects	Criteria for Inert and Non-Hazardous Landfill Capacity Sensitivity	Criteria for Hazardous Landfill Capacity Sensitivity
	baseline/future baseline (i.e. without the Scheme) of regional inert and non-hazardous landfill capacity is expected to reduce considerably by 6-10% as a result of wastes forecast.	baseline/future baseline (i.e., without the Scheme) of regional (or where justified, national) hazardous landfill capacity is expected to reduce considerably by 0.5-1% as a result of wastes forecast.
Very High	Across construction and/or operational phases, the baseline/future baseline (i.e. without the Scheme) of regional inert and non-hazardous landfill capacity is: expected to reduce very considerably (by >10%); end during construction or operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand.	Across the construction and/or operational phases, the baseline/future baseline (i.e., without the Scheme) of regional (or where justified, national) hazardous landfill capacity is: expected to reduce very considerably (by >1%); end during construction or operation; is already known to be unavailable; or, would require new capacity or infrastructure to be put in place to meet forecast demand.

3.1.5 Magnitudes of impact are assessed against the following criteria.

Table 3-2. Magnitude of Impacts

Magnitude of Impact	Inert and Non-Hazardous Waste	Hazardous Waste
No change	Zero waste generation and disposal from the development.	Zero waste generation and disposal from the development.
Negligible	Waste generated by the development will reduce Expansive Study Area landfill capacity baseline by <1%.	Waste generated by the development will reduce Expansive Study Area landfill capacity baseline by <0.1%.
Minor	Waste generated by the development will reduce Expansive Study Area landfill capacity baseline by 1-5%.	Waste generated by the development will reduce Expansive Study Area landfill capacity baseline by <0.1-0.5%.
Moderate	Waste generated by the development will reduce Expansive Study Area landfill capacity baseline by 6-10%.	Waste generated by the development will reduce Expansive Study Area landfill capacity baseline by <0.5-1%.

Magnitude of Impact	Inert and Non-Hazardous Waste	Hazardous Waste
Major	Waste generated by the development will reduce Expansive Study Area landfill capacity baseline by >10%.	Waste generated by the development will reduce Expansive Study Area landfill capacity baseline by >1%.

3.1.6 Effects thresholds and significance are as follows:

Table 3-3. Effects Thresholds

		MAGNITUDE OF IMPACT				
		NO CHANGE	NEGLIGIBLE	MINOR	MODERATE	MAJOR
SENSITIVITY OF RECEPTOR	VERY HIGH	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
	HIGH	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
	MEDIUM	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
	LOW	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
	NEGLIGIBLE	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

Table 3-4. Significance Criteria

EFFECT	WASTE
Neutral	Not Significant
Slight	Significant
Moderate	Significant
Large	
Very large	

4. Baseline

4.1 Current Baseline

4.1.1 Environment Agency data on landfill capacity in 2022 in the East Midlands (for inert/non-hazardous waste) and England (for hazardous waste) is shown below.

Table 4-1. Landfill Void Capacity, 2022

Landfill Type	East Midlands (m³)	England (m³)
Hazardous Merchant	657,000	9,912,000
Hazardous Restricted	-	708,000
Non Hazardous with SNRHW cell*	16,980,000	51,122,000
Non Hazardous	14,858,000	151,482,000
Non Hazardous Restricted	-	0
Inert	18,685,000	129,125,000
Total	51,181,000	342,350,000

**Some non-hazardous sites can accept some Stable Non-Reactive Hazardous Wastes (SNRHW) into a dedicated cell, but this is usually a small part of the overall capacity of the site.*

4.2 Future Baseline

- 4.2.1 Future baseline landfill void capacity is relevant for the assessment of operational waste (for periodic replacement of equipment) and decommissioning waste.
- 4.2.2 There is no published information on landfill capacity at future dates. Whilst individual Waste Planning Authorities carry out Needs Assessments to determine whether they have sufficient landfill capacity to accommodate waste arisings during their Waste Plan period (typically 25 years), there is no requirement to forecast or provide landfill capacity beyond this period.
- 4.2.3 Trend analysis over such lengthy period is inevitably difficult, since even moderate declines in landfill capacity over recent years would, if extended over the 60-year timeline to decommissioning, would predict zero landfill capacity at that time. Conversely, any recent increases in landfill capacity (i.e. due to new sites being permitted) would be extrapolated to unrealistically high future estimates.
- 4.2.4 It is likely that future void capacity will decline if current policies on landfill diversion and the circular economy are maintained, with landfill becoming a decreasingly important part of the waste management system. It is not however possible to accurately predict what will be the landfill void capacity in 60 years time (the estimated operational life of the Scheme). If (at the most extreme application of policies on diversion and the circular economy) the landfill void capacity is extrapolated to fall to zero in the future, then an assessment using the IEMA guidance is not possible, since even a vanishingly small amount of waste requiring landfill (e.g. 1 tonne) would be greater than 10% of the remaining capacity, if that remaining capacity is estimated to be zero.
- 4.2.5 Two approaches have been taken:
- a. Assuming that the level of landfill void capacity in the future will be broadly similar to the current situation; and that the waste planning authorities will plan for and provide sufficient landfill capacity to

accommodate future requirements as required under Section 3 of the National Planning Policy for Waste (Ref 6).

- b. Comparing waste arisings from the Scheme against the amount of construction and demolition waste that is currently being generated in the region per year (on the assumption that this would remain constant over time, which is the assumption taken when Waste Planning Authorities forecast their future needs).

4.2.6 The IEMA Guide does not provide assessment criteria for assessing waste arisings against existing annual arisings, and hence this information is provided for information only, and not used in assessing impacts.

4.3 Recovery and Recycling Assumptions

4.3.1 Two assessments have been carried out, with different assumptions around recovery rates:

- a. A “realistic worst case” of a 70% recovery rate, based on current and likely future recovery rates. Recovery is defined as reuse, recycling and recovery e.g. (energy from waste).
- b. An “absolute worst case” based on the assumption that all construction and demolition (C&D) waste goes to landfill.

4.3.2 The “absolute worst case” is considered to be extremely unlikely to occur, and the “realistic worst case” considered appropriately conservative for the following reasons:

- a. The current C&D recovery rate for England is approximately 92.6% exceeding the national target of 70% recovery and has remained at a similar level since 2010 (Ref 7). A 70% recovery rate is therefore considerably lower than this rate.
- b. Waste generated by the Scheme comprises readily recyclable materials, with existing high recovery rates:
 - i. Concrete and aggregate are widely recycled for use in construction.
 - ii. Metals have a very high recovery rate with a very well developed market, historically driven by economics but increasingly also by the need for decarbonisation of the metal production sector.
 - iii. PV panels are recyclable and there are numerous examples of companies recycling them. Capacity for PV panel recycling in the UK is relatively low at present, because there is currently little waste being generated (since most PV panels that have been installed are still operating). There are strong economic and regulatory drivers for recycling, and it is technically proven, and hence it is realistic to expect a high recovery rate.
 - iv. Primary legislation (the Waste Electrical and Electronic Equipment Regulations 2013 (as amended)) places an obligation on producers (manufacturers and importers) of electrical and electronic equipment (which includes PV panels) to finance the collection and recycling of their products. Producers of PV panels are obligated to join a Producer

Compliance Scheme (PCS), which then ensures their legal obligations are met, most significantly for the collection and recycling of old PV panels.

- 4.3.3 The assessment assumes that current policy, regulatory and fiscal incentives for recycling and otherwise diverting waste from landfill will be maintained. The Applicant considers this is a realistic worst case for assessment since:
- a. Any move away from the current policy framework would be inconsistent with the underlying principles of waste management that have been progressively implemented over the past 20+ years, as well as being inconsistent with the policy objectives of Net Zero (since recycling and recovery have a significant role to play in achieving Net Zero); and
 - b. If at any point the policy framework were to move away from favouring recycling and recovery, then there would need to be a large expansion in landfill capacity to accommodate the waste that was no longer recovered or recycled; in which case landfill void capacity would no longer be considered a sensitive receptor. A move away from favouring recycling recovery without an associated increase in landfill void capacity would not be a tenable policy.

4.4 Cumulative Impacts

- 4.4.1 The cumulative assessment follows the same approach as for the assessment of the Scheme presented in Section 17.8 of **Chapter 17: Other Environmental Topics** of the ES [[APP-048](#)], and considers the waste generated from the following other Solar PV schemes in Lincolnshire and Nottinghamshire as outlined in Table 4-26. Waste estimates are not available for all of these projects, and hence estimates have been generated specifically for this cumulative assessment by:
- a. Estimating PV module waste based on a nominal module capacity of 0.65 kW and weight of 35 kg;
 - b. Assuming that the ratio of other waste¹ to PV module waste for schemes is the average of four schemes for which decommissioning waste estimates are available (Tillbridge Solar Project, Gate Burton Energy Park, Longfield Solar Farm and East Yorkshire Solar Farm) (i.e. 35% of total waste by mass comprises PV modules, and the remaining 65% is other waste).
- 4.4.2 This approach has been taken across all cumulative developments including Tillbridge Solar Project (rather than using the estimates provided for individual projects to enable a clear and consistent approach for the purpose this assessment.
- 4.4.3 The cumulative assessment focuses on decommissioning waste since:
- a. The peak of waste generation would be during decommissioning and this is therefore the worst case in terms of waste generation – the decommissioning scenario would also cover any large-scale interim replacement of PV modules and other components; and

¹ This includes items such as metal supports, aggregate from roads, cables etc. which are primarily non-hazardous.

- b. Operational waste generation is not expected to be concurrent for all projects, given that their PV modules and other components would have different operating periods and it is very unlikely that all facilities would replace their equipment at the same time.

4.4.4 For the purposes of this cumulative assessment, it is assumed that all schemes are decommissioned over a single five year period and that all waste is non-hazardous (although in practice a small proportion may be hazardous – this is considered further below).

4.4.5 The cumulative impact assessment is presented in **Table 4-2**.

Table 4-2. Cumulative Impact Assessment Summary

Scheme*	Size (MW)	PV panel waste (tonnes)	Other waste (tonnes)	Total waste (tonnes)
Beacon Fen Energy Park	600	32,308	59,838	92,145
Heckington Fen Solar Park	500	26,923	49,865	76,788
Mallard Pass Solar Project	350	18,846	34,905	53,751
Temple Oaks Renewable Energy Farm	240	12,923	23,935	36,858
Springwell Solar Farm	800	43,077	79,784	122,860
West Burton Solar Farm	480	25,846	47,870	73,716
Tillbridge Solar Project	500	26,923	49,865	76,788
Gate Burton Energy Park	500	26,923	49,865	76,788
Cottam Solar Project	600	32,308	59,838	92,145
Fosse Green Energy	350	18,846	34,905	53,751
Little Crow Solar Park	150	8,077	14,959	23,036
Oaklands Farm Solar Project	163	8,777	16,256	25,033
One Earth Solar Farm	740	39,846	73,800	113,646
Steeple Renewables Project	400	21,538	39,892	61,430
Great North Road Solar Park	800	43,077	79,784	122,860
Tiln Farm	49.9	2,687	4,976	7,663
Lady Well Lane Hadon	15	808	1,496	2,304
Wood Lane Solar Farm	49.9	2,687	4,976	7,663
Tuxford Road Solar Farm	49.9	2,687	4,976	7,663
Land west of Sturton Road	49.9	2,687	4,976	7,663
Bumble Bee Solar Farm	49.9	2,687	4,976	7,663
Land at west and south of Oaks Lane and North of Gainsborough Road	49.9	2,687	4,976	7,663
Land at High Marnham Former Power Station (Solar Farm)	43	2,315	4,288	6,604
Land north of Corringham Road, Gainsborough	49.9	2,687	4,976	7,663
Stow Park Farm	35	1,885	3,491	5,375
TOTAL:	7,615	410,055	759,469	1,169,524

Scheme*	Size (MW)	PV panel waste (tonnes)	Other waste (tonnes)	Total waste (tonnes)
Cumulative Waste (assuming all schemes decommissioned within five year window)				
Total waste from cumulative schemes (tonnes)		82,011	151,894	233,905
Total waste from cumulative schemes (m ³) (assuming density of 0.31 t/m ³ for PV panels and 1.6 t/m ³ for other waste)		264,551	243,030	507,582
Waste to landfill, m ³ (realistic worst case estimate with 70% recovery)		79,365	72,909	152,274
Waste to landfill, m ³ (absolute worst case estimate - assuming zero recycling/recovery)		264,551	243,030	507,582
Baseline				
Regional landfill capacity (m ³)				50,523,629
Regional C&D waste arisings (tonnes)				5,174,588
Lincs & Notts C&D waste arisings (tonnes)				2,086,000
Comparison Against Baseline				
% of regional landfill capacity required for Scheme (realistic worst case estimate with 70% recovery)		0.16%	0.14%	0.30%
% of regional landfill capacity required for Scheme (absolute worst case estimate)		0.52%	0.48%	1.00%
% of regional C&D waste arisings		1.6%	2.9%	4.5%
% of Lincs & Notts C&D waste arisings		3.9%	7.3%	11.2%
Assessment				
Receptor Sensitivity				Very High
Realistic Worst Case				
Magnitude of Impact				Negligible
Effect				Slight adverse
Significance				Not significant
Absolute Worst Case				
Magnitude of Impact				Minor
Effect				Moderate adverse
Significance				Significant

* Refer to **Appendix 18-1: List of Cumulative Developments of the ES [APP-124]** for further details of the cumulative schemes.

- 4.4.6 The assessment shows that, that under the absolute worst case assessment (assuming zero recycling/recovery), cumulative impacts would be significant. Under the realistic worst case (70% recovery), cumulative impacts would be not significant.
- 4.4.7 Assuming decommissioning of all of the identified cumulative schemes occurs over a single five year period, waste from the cumulative schemes would equate to approximately 4.5% of C&D waste arisings in the East Midlands, and 11.2% of C&D waste arisings in Lincolnshire and Nottinghamshire.
- 4.4.8 The threshold of significance for an effect on hazardous landfill capacity is 0.1% of national capacity, equivalent to 9,912 m³. If it is assumed that the hazardous fraction of waste solar panels is sent to hazardous waste landfill, then a significant effect would occur if this hazardous fraction represents more than 3.75% of the mass of solar panels. However, the majority of solar panel components would not be considered to be hazardous waste, e.g. approximately 76%-89% glass, 4-10% plastic and 6-8% aluminium frame (Ref 8).

5. References

- Ref 1 IEMA (2020) IEMA guide to: Materials and Waste in Environmental Impact Assessment. Available at: <https://www.iema.net/resources/reading-room/2020/03/30/materials-and-waste-in-environmental-impact-assessment> [Accessed: 03/10/2024]
- Ref 2 Lincolnshire County Council (2024) Gate Burton Energy Park, Comments on Applicant Response to Rule 17 Request. Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010131/EN010131-001625-submissions-received-by-Deadline-6.pdf> [Accessed: 03/10/2024]
- Ref 3 Gate Burton Energy Park (2023) Applicant Response to Rule 17 Request – Waste. Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010131/EN010131-001599-8.33%20Applicant%20Response%20to%20Rule%2017%20Request%20-%20Waste.pdf> [Accessed 03/10/2024]
- Ref 4 Department for Environment, Food and Rural Affairs (Defra) (2010). The Strategy for Hazardous Waste Management in England. No longer available online.
- Ref 5 Department for Environment, Food and Rural Affairs (Defra) (2013) . National Policy Statement for Hazardous Waste. Available at: <https://assets.publishing.service.gov.uk/media/5a7c68b7e5274a5590059abd/pb13927-hazardous-waste-policy-20130606.pdf> [Accessed 04/10/2024]
- Ref 6 Ministry of Housing, Communities & Local Government (2014). National Planning Policy for Waste. Available at: <https://www.gov.uk/government/publications/national-planning-policy-for-waste/national-planning-policy-for-waste> [Accessed 04/10/2024]
- Ref 7 Department for Environment, Food and Rural Affairs (Defra) (2024). UK Statistics on Waste - Recovery rate from non-hazardous construction and demolition (C&D) waste. Available at: <https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste#recovery-rate-from-non-hazardous-construction-and-demolition-cd-waste> [Accessed 04/10/2024]
- Ref 8 Vekony, AT (2024) The Opportunities of Solar Panel Recycling. GreenMatch. Available at: <https://www.greenmatch.co.uk/blog/2017/10/the-opportunities-of-solar-panel-recycling> [Accessed 04/10/2024]

Appendix B Report on Cumulative Impacts of Solar Projects on BMV Land in Lincolnshire

**Tillbridge Solar Project
EN010142**

**Volume 9
Report on the Cumulative Impacts of Solar
Projects on Agricultural Land in Lincolnshire
Document Reference: EN010142/APP/9.1**

The Infrastructure Planning (Examination Procedure) Rules 2010

**October 2024
Revision Number: 00**

Table of Contents

1.	Introduction	2
1.1	Purpose of this Report	2
1.2	Change Application	2
2.	Impact of the Scheme on Agricultural Land	3
2.1	Agricultural Land and Planning Policy	3
2.2	Recent Policy Interpretation for Solar NSIPs	5
3.	The Scheme and Agricultural Land Use.....	7
3.1	Introduction	7
4.	Effect of the Scheme on BMV Land in Lincolnshire	14
4.1	Introduction	14
4.2	Agricultural Land Quality in Lincolnshire	15
4.3	The Effect of the Scheme on BMV Agricultural Land Availability in Lincolnshire	18
5.	The Cumulative Impact of the Scheme and other projects in Lincolnshire.....	19
5.1	DCO Projects.....	19
	Overview	19
	Methodology and Assumptions	20
	Summary of Results.....	21
5.2	Town and Country Planning Act (1990) (TCPA) Projects	22
	Overview	22
	Methodology and Assumptions	22
	Summary of Results.....	23
6.	Conclusion	23
	Annex A – List of DCO and TCPA Projects, and Figures	26
7.	References	57

Tables

Table 3-1:	ALC Grades across the Principal Site.....	9
Table 3-2:	Detailed breakdown of agricultural use for each part of the Principal Site	11
Table 4-1:	ALC Areas in England based on DEFRA’s Pre-1988 Provisional Maps...	15
Table 4-2:	ALC Areas in Lincolnshire based on DEFRA’s Pre-1988 Provisional Maps	16
Table 4-3:	Estimated ALC Areas in Lincolnshire based on Natural England’s Technical Information Note 049 (2012).....	17
Table 6-1:	Summary of Cumulative Impacts on BMV Land in Lincolnshire	24
Table 6-2:	List of Solar TCPA Applications within Lincolnshire and Nottinghamshire	27
Table 6-3:	List of Solar DCO Applications within Lincolnshire and Nottinghamshire	51

1. Introduction

1.1 Purpose of this Report

- 1.1.1 This report has been prepared to support the application (the Application) for a Development Consent Order (DCO) under section 37 of the Planning Act 2008 (PA 2008) (Ref. 1) for the Tillbridge Solar Project (the Scheme) made by Tillbridge Solar Limited (the Applicant). The Application was submitted to the Secretary of State for Energy Security and Net Zero (the Secretary of State) and was accepted for examination on 8 May 2024. Consultees and members of the public were able to register as an Interested Party and submit a Relevant Representation between 13 June 2024 and 1 August 2024.
- 1.1.2 This report provides additional information on the cumulative impacts of the Scheme and other solar Projects on agricultural land in Lincolnshire and is submitted at Deadline 1 as part of the **Applicant's Response to Relevant Representations [EN010142/APP/9.1]**. It expands on the Applicant's responses to Relevant Representations submitted by consultees including Statutory Consultees, Local Authorities, Parish Councils and members of the public raising concerns about the cumulative impacts of multiple solar projects within the local area on agricultural land in Lincolnshire, including the impacts on food production.
- 1.1.3 Gate Burton Energy Park [EN010131], which is one of four solar DCO projects located in Lincolnshire (and for which development consent was recently granted by the Secretary of State), prepared and submitted a report – 'Further Information on Agricultural Land' [[REP2-046 in the Gate Burton examination library](#)] (Ref. 2) – as part of their examination to provide additional information on the project's cumulative impacts on agricultural land in Lincolnshire. This report set out the number and locations of solar projects currently being proposed in Lincolnshire, considering both development consent orders under the PA 2008 (Ref. 1) and planning permission under the Town and Country Planning Act 1990 (as amended) (Ref. 14).
- 1.1.4 The Applicant has therefore taken the decision to prepare a similar report, building on the findings of Gate Burton Energy Park's 'Further Information on Agricultural Land' (Ref. 2) report and to provide up to date information of the potential cumulative impact of the Scheme and other solar projects on Best and Most Versatile (BMV) agricultural land in Lincolnshire.

1.2 Change Application

- 1.2.1 Following the submission and acceptance of the DCO Application, the Applicant has continued to engage with affected landowners (hereafter referred to as "Affected Parties") to acquire the relevant freehold interests, new rights, and temporary use of land needed for the construction, operation (including maintenance) and decommissioning of the Scheme by agreement, to ensure fulfilment of the Scheme.

- 1.2.2 As a result of this engagement, the Applicant made a request to change the DCO Application to amend the Order limits to reflect the outcome of negotiations with Affected Parties (the “Change Request”). The Change Request was submitted for consideration by the Examining Authority (ExA) on 27 September 2024. The ExA granted the Change Request on 24 October 2024 within the Rule 8 letter.
- 1.2.3 The changes that formed part of the Change Request (the “Proposed Changes”) included reductions or modifications of the Order limits or minor refinements to the proposed layout of the Scheme. As the Change Request did not involve any increase or extension of the Order limits, it did not necessitate any additional Compulsory Acquisition relating to new plots of land and/or interests.
- 1.2.4 As a result of the Change Application, the overall area of the Principal Site was reduced by approximately 5 hectares (ha). This has meant that the amount of agricultural land impacted by the Scheme has also reduced. The areas excluded from the Order limits mostly included non-agricultural and Grade 3b agricultural land, with a very small amount of BMV land being excluded. This report therefore uses the most up to date agricultural land calculations, based on the reduced Order limits, which will differ very slightly to the figures submitted as part of the original Application. The conclusions in **Chapter 15: Soils and Agriculture of the ES [APP-046]** still stand however, as impacts to agricultural land are reduced, and these reductions are very minor.

2. Impact of the Scheme on Agricultural Land

2.1 Agricultural Land and Planning Policy

- 2.1.1 Section 104(2) of the PA 2008 (Ref. 1) is to be applied when determining development consent for a scheme where any relevant national policy statement has effect. In respect of this Scheme, the Secretary of State must decide the Application in accordance with the National Policy Statements (NPS) for Energy, designated in January 2024, under Section 104(3) of the PA 2008 (Ref. 1).
- 2.1.2 NPS EN-1 (Ref. 3) sets out the Overarching National Policy Statement for Energy, NPS EN-3 (Ref. 4) comprises the national policy statement for renewable energy infrastructure including specific policy for solar (Section 2.10) and NPS EN-5 (Ref. 5) sets out national policy for electricity networks infrastructure. Combined, these NPS set out the Government’s policy for the development of nationally significant energy infrastructure along with the need for new infrastructure, and policy framework for decision making.
- 2.1.3 The Agricultural Land Classification (ALC) system is used in England and Wales as a method to assess the quality of farms. Agricultural land is classified into five grades (Grade 1, 2, 3a, 3b, 4 and 5). Grade 1 is the best quality and Grade 5 is the poorest.
- 2.1.4 Paragraph 2.10.33 of NPS EN-3 confirms that the ALC system is the only approved system for grading agricultural quality in England and Wales.

Agricultural land within Grades 1, 2 and 3a is defined as BMV land, as set out in Natural England's Guide to assessing development proposals on agricultural land (2021) (Ref. 7).

- 2.1.5 Government policy, at paragraph 5.11.12 of NPS EN-1 states that *"Applicants should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification)"*. Paragraph 5.11.12 of NPS EN-1 also states that development should *"preferably use land in areas of poorer quality (grades 3b, 4 and 5)"*. Paragraph 5.11.34 of NPS EN-1 further adds that *"Where development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality"*. This supports the long-standing principle in planning policy that lower quality agricultural land (Grades 3b, 4 and 5) does not benefit from the same protection as BMV land.
- 2.1.6 Despite the above, paragraph 2.10.29 of NPS EN-3 states that *"land type should not be a predominating factor in determining the suitability of the site location"* with respect to solar.
- 2.1.7 NPS EN-3 provides further clarification and guidance on how policies relating to BMV agricultural land apply to the development of solar Nationally Significant Infrastructure Projects (NSIPs). Paragraph 2.10.30 states that *"Whilst the development of ground mounted solar arrays is not prohibited on Best and Most Versatile agricultural land", "the impacts of such are expected to be considered"* and paragraph 5.11.34 of NPS EN-1 confirms that in decision making, the siting of a Scheme on BMV land should be justified. This confirms that development on BMV land is not prohibited provided it is justified.
- 2.1.8 Paragraph 2.10.31 of NPS EN-3 recognises that at solar NSIP scale, it is likely that applicants' development will use some agricultural land and paragraph 2.10.145 therefore requires the Secretary of State to *"take into account the economic and other benefits of the best and most versatile agricultural land"* and *"ensure that the applicant has put forward appropriate mitigation measures to minimise impacts on soils or soil resources"*.
- 2.1.9 The National Planning Policy Framework (NPPF) (Ref. 8) also includes reference to the approach to the use of agricultural land at footnote 62, which re-iterates that *"Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality"*. It also sets out that the *"availability of agricultural land used for food production should be considered, alongside the other policies in this Framework, when deciding what sites are most appropriate for development."*
- 2.1.10 Overall, it is concluded that Government policy on agricultural land is clear that:
- a. The impact of a project on BMV land should be minimised;
 - b. Lower grades of agricultural land should be used in preference to higher grades;
 - c. Development of solar projects on BMV land is not prohibited; and

- d. Land that is not BMV is not afforded the same policy protection as BMV land.
- 2.1.11 In addition to Government policy outlined above, on 15 May 2024 the Secretary of State issued a Written Ministerial Statement (WMS) “*Solar and Protecting our Food Security and Best and Most Versatile (BMV) Land*” (Ref. 9). The WMS states that, although food security is an essential part of national security, the Government are concerned with energy security and prices and state that they will be combatting this by “*racing ahead with deployment of renewable energy*” and state that solar power, specifically, “*is a key part of the Government’s strategy for energy security, net zero and clean growth*”.
- 2.1.12 The WMS re-iterates the Government’s position and policy set out in NPS EN-1 and NPS EN-3 regarding the use of BMV land and does not alter the weight to be given to the use of BMV land.
- 2.1.13 Further, on 18 July 2024, the Secretary of State made a statement in the House of Commons called “*Clean Energy Superpower Mission*” (Ref. 10). In this statement, the Secretary of State noted that “*the biggest threat to nature and food security and to our rural communities is not solar panels or onshore wind; it is the climate crisis, which threatens our best farmland, food production and the livelihoods of farmers*”.

2.2 Recent Policy Interpretation for Solar NSIPs

- 2.2.1 To date, seven solar NSIPs have been consented under the DCO regime within England.
- 2.2.2 Within Lincolnshire, development consent has recently been granted for Gate Burton Energy Park [EN10131] on 15 July 2024, the Cottam Solar Project [EN10133] on 5 September 2024 and Mallard Pass Solar Farm [EN010127] on 12 July 2024. A decision on the West Burton Solar Project [EN010132], also located in Lincolnshire, is due on 8 November 2024. The Gate Burton Energy Park, the Cottam Solar Project and the West Burton Solar Project are located in proximity to, and share a Cable Route Corridor with, the Scheme, as discussed in **Joint Report on Interrelationships between Nationally Significant Infrastructure Projects [APP-215 – APP-217]**.
- 2.2.3 Adjacent to Lincolnshire, in North Lincolnshire Unitary Authority, Little Crow Solar Park [EN010101] has been consented.
- 2.2.4 Three others, Cleve Hill Solar Park [EN010085], Sunnica Energy Farm [EN010106] and Longfield Solar Farm [EN010118], which are not located near Lincolnshire, have also been consented.
- 2.2.5 Each one of these consented solar NSIPs to date have been located on farmland, including some BMV agricultural land.
- 2.2.6 **Table 6-3** in **Annex A** provides a list of solar NSIPs within or adjacent to Lincolnshire, showing those that have been consented and those that are in the pre-application or pre-examination phase of the DCO process to date, and their impacts on BMV land.

2.2.7 In terms of the policy interpretation relating to agricultural land for solar NSIPs in isolation, the Secretary of State's decision for Longfield Solar Farm [EN010118] is of relevance.

2.2.8 Paragraph 4.58 of the Secretary of State's decision letter for Longfield Solar Farm [EN010118] on 26 June 2023 states that:

“The ExA considers that the Proposed Development would be in accordance with both national and local policies [ER 5.7.54, ER 7.1.37]. The ExA notes that soil quality will be managed and maintained through Requirement 19 of the Order and the provision for submission of a Soil Resource Management Plan [ER 5.7.52, ER 7.1.35]. The ExA concludes that the loss of any BMV agricultural land is to be discouraged, and both the temporary and permanent loss of land weighs against the Proposed Development. However, the ExA considers that the Applicant has sought to minimise impacts and that, where BMV agricultural land is lost, it would be limited in extent and duration, as well as justified by other sustainability considerations [ER 5.7.53, ER 7.1.36]. As such, the ExA ascribes the resultant harm a small amount of negative weight in the planning balance [ER 5.7.53, ER 7.1.26]. 4.59 The Secretary of State agrees with the ExA's conclusions and ascribes this matter a small amount of negative weight in the planning balance.”

2.2.9 In this decision, both the ExA and the Secretary of State considered that Longfield Solar Farm [EN010118] was in accordance with national planning policy on agricultural land, attributing only a 'small amount of negative weight', to the loss of 150 ha of BMV land, of which over a third was Grade 2. Whilst the Application recognises that every project must be determined on its own merits, the Longfield Solar Farm [EN010118] decision is important and relevant. It should be noted that the Longfield Solar Farm [EN010118] included more than twice the amount of BMV land than the Scheme (which is 60.29 ha), and more than five times the amount of Grade 2 land. Therefore, in terms of both policy compliance and the weight given to the impacts on agricultural land, the Applicant considers that the same conclusion can be reached for the Scheme.

2.2.10 More recently, the Secretary of State's decisions on Gate Burton Energy Park [EN010131] and the Cottam Solar Project [EN010133] are also important and of particular relevance due to their location in Lincolnshire and proximity to the Scheme. This is specifically in relation to the Secretary of State's decisions relating to the cumulative impacts of the four solar NSIP's (Gate Burton Energy Park [EN010131], Cottam Solar Project [EN010133], West Burton Solar Project [EN010132] and the Scheme), on BMV land in Lincolnshire.

2.2.11 The Secretary of State in his decision on Gate Burton Energy Park [EN010131] (at paragraph 4.176) agreed with the ExA's recommendations with respect to the loss of BMV land concluding that it had been demonstrated that the use of agricultural land was necessary, and that the Applicant had sought to avoid the permanent and temporary loss of BMV land where possible.

- 2.2.12 The Secretary of State in his decision on the Cottam Solar Project [EN010133] also agreed with the ExA's recommendation report, that the project would revert back to agricultural use once the operational time-period has expired and any effects would therefore be temporary and reversible. The Secretary of State also agreed with the ExA that *"this should be classed as "little negative weight" rather than "significant negative weight" in recognition of the point that, whilst the use of arable farmland exceeds NPPF guidance, it is in line with the 2024 NPS."* He also stated that for a project of this size, the amount of BMV land being removed from arable food production *"would be a very small proportion of the total amount of land being used."*
- 2.2.13 In relation to cumulative impacts, Paragraph 4.178 of the Secretary of State's decision on Gate Burton Energy Park [EN010131] refers to the cumulative loss, which takes account of the Scheme, Cottam Solar Project [EN010133] and West Burton Solar Project [EN010132] stating:
- "The Secretary of State notes that the cumulative loss of BMV land in Lincolnshire due to NSIP solar projects amounts to 0.83% of the total BMV land with a further 0.21% loss to TCPA solar projects. The Secretary of State considers that this is only around 1% of the total BMV land in Lincolnshire, further noting that the land will be lost for a temporary, albeit long-term period and that the land can be returned upon decommissioning of development to its original state."*
- 2.2.14 In terms of the relevance and importance of these decisions to the Scheme, the Applicant considers that the same conclusions can be reached for the Scheme in terms of both policy compliance and the weight given to the loss of BMV agricultural land.
- 2.2.15 The majority (98.4%) of the BMV land that forms part of the Scheme will be able to be reverted back to agricultural use following decommissioning, and the 0.07% permanent loss of BMV land, which would be to woodland, providing ecological benefits, is not significant. This aligns with the conclusion set out in **Chapter 15: Soils and Agriculture of the ES [APP-046]**. The decisions on both the Gate Burton Energy Park [EN010131] and the Cottam Solar Project [EN010133] have already considered the cumulative impacts of these projects, and the Scheme, on BMV agricultural land, concluding that the temporary loss of land from arable production would be very small and attributing little negative weight in the planning balance. The Applicant recognises that it is important that decisions and planning policy are applied consistently, and therefore considers that a similar decision can and should be reached for the Scheme.

3. The Scheme and Agricultural Land Use

3.1 Introduction

- 3.1.1 An assessment of the Scheme's likely significant effects on agricultural land quality and soil resource was undertaken in **Chapter 15: Soils and Agriculture of the ES [APP-046]**. **Table 15-10 of Chapter 15: Soils and Agriculture of the ES [APP-046]** shows the distribution of Agricultural Land

Classification (ALC) Grades within the Principal Site, determined by the detailed soil survey presented in **Appendix 15-2: Agricultural Land Classification Baseline Report** of the ES [APP-116]. This states that the majority (1289.8 ha or 95.5%) of the Principal Site is not BMV agricultural land. Based on the updated ALC figures resulting from the reduction in the Order limits as part of the Change Request, this figure has reduced very slightly to 1284.47 ha, which is 95.52% for the Principal Site.

- 3.1.2 Within the Cable Route Corridor, agricultural use will be able to continue following construction, as the high voltage cable will be buried safely below maximum cultivation depth, and the trenching work will not downgrade the ALC grade. Therefore, soil surveys were not carried out in that area as part of the pre-application stage of the Scheme, and the ALC grade for the Cable Route Corridor is not currently known. However, as set out in the **Framework Soil Management Plan [EN010142/APP/7.12(Rev01)]**, before construction work commences additional soil surveys will be undertaken along the Cable Route Corridor, which will be set out in the detailed SMP, which will be substantially in accordance with the **Framework Soil Management Plan [EN010142/APP/7.12(Rev01)]**. This is secured by requirement 18 in Schedule 2 of the **draft DCO [EN010142/APP/3.1Rev03]**. **Chapter 15: Soils and Agriculture** of the ES [APP-046] concludes that there will be no change in ALC grade as a result of the Scheme, resulting in a negligible effect, irrespective of existing ALC grade.
- 3.1.3 **Table 3-1** below provides an overview of the split of land within the Principal Site, based on the updated figures resulting from the reduction to the Order limits as part of the Change Request. This shows that the Principal Site is predominantly Grade 3b (85.60%), with some Grade 3a (3.80%) and Grade 2 (0.68%) BMV land, while 9.92% of the Principal Site is non-agricultural land. This results in the Principal Site comprising a total of approximately 4.48% (60.29 ha) BMV agricultural land. The locations of BMV land are shown on **Figure 15-1: Principal Site Agricultural Land Classification Distribution** of the ES [APP-192].
- 3.1.4 As a result of the reduction in the Order limits as part of the Change Request, approximately 4.2% of the total 4.48% of BMV agricultural land within the Principal Site will be temporarily removed from arable production during the Scheme's lifetime. This will comprise the following:
- a. Approximately 1.79% of BMV agricultural land taken up by Solar PV panels, Solar Stations and BESS;
 - b. Approximately 0.01% of BMV agricultural land taken up by Access Tracks;
 - c. Approximately 1.53% of BMV agricultural land taken up by Biodiversity Zones;
 - d. Approximately 0.8% of BMV agricultural land taken up by Sensitive Archaeological Sites; and
 - e. Approximately 0.07% of BMV agricultural land taken up by proposed woodland.

- 3.1.5 The remaining 0.28% of BMV land from the 4.48% of total BMV agricultural land within the Principal Site comprises habitats such as hedgerow and woodland that will be retained by the Scheme.
- 3.1.6 The locations of the elements of the Scheme are set out on the **Indicative Principal Site Layout Plan (Figure 3-1 of the ES [AS-055])**.
- 3.1.7 Although the Scheme will result in the use of some BMV agricultural land for various elements during construction, operation (including maintenance) and decommissioning, the majority of the BMV land will not be permanently lost or degraded. After decommissioning, those areas of the Principal Site proposed for solar PV panels, Solar Stations and BESS (with these elements removed through decommissioning) will allow the land to be managed for arable production again following an extended period of low input grassland. All other infrastructure will be removed allowing agricultural production to resume. The removal of hard standing and access tracks will be followed by the reinstatement of the stripped and stored topsoil to restore agricultural land to its previous ALC grade. Sensitive Archaeological Sites and Biodiversity Zones will be handed back to the landowner following decommissioning of the Scheme, who will be able to resume agricultural uses (should they wish to do so) and as such are assumed to be a temporary change of use of agricultural land.
- 3.1.8 The proposed woodland planting and substations have the potential to be permanent subject to landowner decisions following the decommissioning of the Scheme. The future of the substations would be agreed with the local planning authority prior to the commencement of the decommissioning phase; however, the substations are not located on BMV land and the substation structures can be removed entirely with stored topsoil replaced and the land returned to its current agricultural management practises. The potential change of use of 0.92 ha (or 0.07% of agricultural land) that is BMV land to proposed woodland would provide long term ecological enhancement, and the potential permanent loss of BMV land is not considered to be significant.

Table 3-1: ALC Grades across the Principal Site

ALC Grade	Area (Ha)	% of Area	Details
BMV Land			
Subgrade 2 (temporarily taken out of use by Scheme)	9.21	0.68	Temporarily taken out of use by the Scheme for Access Tracks, Biodiversity Zones and Sensitive Archaeological Areas.
Subgrade 3a (potential permanent loss)	0.92	0.07	Potential permanent change of use of BMV land to proposed woodland.
Subgrade 3a	46.6	3.45	Temporarily taken out of use by the Scheme for Solar Panels, Solar Station and BESS, Access

ALC Grade	Area (Ha)	% of Area	Details
(temporarily taken out of use by the Scheme)			Roads, Access Tracks, Biodiversity Zones, and Sensitive Archaeological Sites.
BMV land (Grade 2 and 3a land) that comprises retained habitats	3.56	0.28	This BMV land comprises habitats that will be retained by the Scheme.
Total BMV Land	60.29	4.48%	
Other Land			
Subgrade 3b (temporarily taken out of use by the Scheme)	982.2	73.13	Temporarily taken out of use by the Scheme for Solar Panels, Solar Station and BESS, Access Roads, Access Tracks, Biodiversity Zones, and Sensitive Archaeological Sites.
Subgrade 3b (potential permanent loss)	35.28	2.62	Potential change of use of non BMV land to proposed woodland and substations.
Subgrade 3b (retained habitats)	133.6	9.85	This Grade 3b land comprises habitats that will be retained by the Scheme.
Non-agricultural land	133.39	9.92	Land within the Order limits that is non-agricultural, including roads.
Total non-BMV land	1284.47	95.52%	

Table 3-2: Detailed breakdown of agricultural use for each part of the Principal Site

ALC Grade	Principal Site	Solar Panels	Solar Stations and BESS	Temporary Construction Compounds	Solar Farm Control Centre Storage	On-site Substations	Access Roads and Access Tracks	Permissive Path	Biodiversity Zone	Sensitive Archaeological Sites	Proposed Woodland	Retained Habitats
	Area (ha) and % of Area	Area (ha) and % of Area	Area (ha) and % of Area	Area (ha) and % of Area	Area (ha) and % of Area	Area (ha) and % of Area	Area (ha) and % of Area	Area (ha) and % of Area	Area (ha) and % of Area	Area (ha) and % of Area	Area (ha) and % of Area	Area (ha) and % of Area
Grade 1	0 ha	0 ha	0 ha	0 ha	0 ha	0 ha	0 ha	0 ha	0 ha	0 ha	0 ha	0 ha
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grade 2	9.17 ha	0 ha	0 ha	0 ha	0 ha	0 ha	0.04 ha	0 ha	8.06 ha	1.11 ha	0 ha	3.56 ha
	0.68%	0%	0%	0%	0%	0%	0.00%	0%	0.60%	0.08%	0%	0.28%
Grade 3a	51.12 ha	23.97 ha	0.17 ha	0 ha	0 ha	0 ha	0.2 ha	0 ha	12.56 ha	9.70 ha	0.92 ha	
	3.80%	1.78%	0.01%	0%	0%	0%	0.01%	0%	0.93%	0.72%	0.07%	
Grade 3b	1151.08 ha	686.03 ha	23.05 ha	2.00 ha	0.15 ha	2.54 ha	9.93 ha	8.58 ha	191.34 ha	61.12 ha	32.74 ha	133.6 ha

	85.60%	51.01%	1.71%	0.15%	0.01%	0.19%	0.83%	0.64%	14.23%	4.55%	2.43%	9.85%
Non-agricultural land	133.39 ha											
	9.92%											
Total Area (ha)	1344.76 ha	710 ha	23.22 ha	2.00 ha	0.15 ha	2.54 ha	10.17 ha	8.58 ha	211.96 ha	71.93 ha	33.66 ha	137.16 ha
Total % of Area	100%	52.79%	1.72%	0.15%	0.01%	0.19%	0.84%	0.64%	15.76%	5.35%	2.5%	10.13%

- 3.1.9 As set out in **Table 3-1** above, the majority of the BMV land within the Principal Site is Grade 3a (51.12 ha or 3.52%) with a small area of Grade 2 (9.17 ha or 0.68%). **Chapter 15: Soils and Agriculture** of the ES **[APP-046]** and the **Planning Statement [AS-029]** explain that the BMV land within the Principal Site comprises seven small, isolated parcels of BMV land, which do not follow field boundaries and generally form isolated pockets both within the middle of the Principal Site and some parcels to the edges. Due to their small size and location within the Scheme, they are unlikely to be viable for farming and are likely to only be in farming use alongside the lower grade BMV land. The remaining land, 1284.47 ha (95.52% of the Principal Site), is either Grade 3b agricultural land or non-agricultural land.
- 3.1.10 Agricultural land quality was a key consideration in the Applicant's site selection process as described in **Chapter 4: Alternatives and Design Evolution** of the ES **[APP-035]**. The site selection process excluded BMV land using Natural England's Pre-1988 Provisional Mapping database (Ref. 6). Following this, as part of the iterative design evolution of the Scheme and using the results of a site specific ALC survey carried out for the Principal Site, the Order limits were revised to further minimise impacts on BMV land. The Applicant also removed an area of Grade 3a land which was located on the eastern extent of the Principal Site from the Scheme following statutory consultation, reducing the amount of affected BMV land by 11ha. This is set out in more detail in the **Design and Access Statement [AS-031]**. The design of the Principal Site layout has minimised the use of BMV land and reduced impacts where practicable through the reduction in BMV land forming part of the Scheme and through siting elements of the Scheme that could be permanent largely outside of BMV land.
- 3.1.11 Furthermore, it remains an option for agricultural operations to continue within the Principal Site should landowners choose to carry out sheep grazing.
- 3.1.12 In summary, this detailed breakdown shows that the majority of the temporary suspension of BMV land in agricultural use is reversible and will be able to be returned back to agriculture use at the end of the lifetime of the Scheme, meaning that the majority of the agricultural resource within the Scheme will not be lost with only a negligible amount changing to woodland (0.92 ha or 0.07%) within the Principal Site, which can provide permanent ecological enhancement and landscape visual screening benefits. The site selection process as set out in **Chapter 4: Alternatives and Design Evolution** of the ES **[APP-035]** demonstrates that the use of agricultural land for the Scheme is justified and that the use and impact on best and most versatile agricultural land has been minimised, thereby being in accordance with NPS EN-1 (Ref. 3) and EN-3 (Ref. 4).

4. Effect of the Scheme on BMV Land in Lincolnshire

4.1 Introduction

- 4.1.1 As set out in **Chapter 15: Soils and Agriculture** of the ES [APP-046] and the **Planning Statement [AS-029]** although the Scheme will result in the use of some BMV agricultural land for alternative uses during each phase of the Scheme, the majority of the land will not be permanently lost or degraded and the impacts are temporary and reversible. This conclusion still stands following the acceptance of the Change Request by the ExA because 59.37 ha of the total 60.29 ha of BMV land within the Principal Site (98.5% of the total BMV land) will be able to be returned back to agriculture use at the end of the lifetime of the Scheme.
- 4.1.2 However, the Applicant recognises that the Scheme is one of 17 solar DCO applications which have been consented, submitted or are planned within Lincolnshire and the adjoining counties of North Lincolnshire, Nottinghamshire, South Yorkshire and Rutland. In addition to the Scheme, other projects comprise Gate Burton Energy Park [EN010131], Mallard Pass Solar Farm [EN010127], Cottam Solar Project [EN010133], Heckington Fen Solar Park [EN010123], West Burton Solar Project [EN010133], Little Crow Solar Park [EN010101], Temple Oaks Renewable Energy Park [EN010126], Springwell Solar Farm [EN010149], Beacon Fen Energy Park [EN010151], Fosse Green Energy [EN010154], One Earth Solar [EN010159], Steeple Renewables Project [EN010163], Meridian Solar Farm [EN010169], Fenwick Solar Farm [EN010152], Tween Bridge Solar Farm [EN010148] and Great North Road Solar Park [EN010162].
- 4.1.3 The 'Further Information on Agricultural Land' [[REP2-046 in the Gate Burton examination library](#)] (Ref. 2) report submitted for Gate Burton Energy Park included consideration of the Oaklands Farm Solar Project [EN010122]. However, the Applicant has taken the decision to remove this project from the list of solar DCO projects within or surrounding Lincolnshire as it is located more than 150 km away in South Derbyshire and is not considered to be near Lincolnshire.
- 4.1.4 According to the Government's Renewable Energy Planning Database July 2024 Quarterly Extract (Ref. 11), which was updated on 1 July 2024, there are also 73 smaller ground mounted solar project applications in Lincolnshire, and 68 small ground mounted solar project applications in Nottinghamshire, which have been or are being considered by district authorities under the Town and County Planning Act 1990 (TCPA) regime and have either been consented or are awaiting decision. Consequently, there is potential for these solar developments to have a cumulative effect on BMV agricultural land in Lincolnshire.
- 4.1.5 The Applicant has therefore considered both solar DCO projects and solar TCPA projects and provided further information on their impacts on agricultural land, specifically BMV, in order to analyse the cumulative impacts of these projects on BMV land in Lincolnshire. This provides additional information in response to concerns raised in the Relevant Representations

relating to the impact of the Scheme upon agricultural land and food production, which can be found in **Applicant’s Responses to Relevant Representations [EN010142/APP/9.1]** submitted at Deadline 1.

4.2 Agricultural Land Quality in Lincolnshire

- 4.2.1 In order to understand the effect of the Scheme on BMV agricultural land in the context of Lincolnshire, the Applicant has sought to understand the proportion of BMV agricultural land currently existing in Lincolnshire. There are no published statistics or datasets available which provide specific figures on the current amount of BMV agricultural land existing within Lincolnshire. Therefore, the Applicant has reviewed the breakdown of ALC land in England and Lincolnshire as set out in Gate Burton Energy Park’s ‘Further Information on Agricultural Land’ (Ref. 2) report submitted as part of their examination. In this document, Gate Burton Energy Park identified the likely ALC grades of agricultural land in Lincolnshire based on the information that is available, which the Applicant has reviewed and set out below.
- 4.2.2 As set out in Gate Burton Energy Park’s ‘Further Information on Agricultural Land’ (Ref. 2) report the ALC system was introduced in 1966, and at that time, all agricultural land was mapped from reconnaissance field surveys and placed into 5 categories (Grades 1-5) based on the quality of the land. The resulting “provisional” series of maps was published between 1967 and 1974 on an Ordnance Survey map based at a scale of one inch to one mile. They are now available on the Department for Environment Food and Rural Affairs (DEFRA)’s website and are referred to in this report as the Pre-1988 Provisional Maps (Ref. 6). The statistics published on the Pre-1988 Provisional Maps represent the only measured basis of agricultural land available and they are still used and are useful for general guidance. Because the statistics are high level and have not recently been updated, there are limitations to their use. They also do not account for the division of Grade 3 into Subgrades 3a and 3b, which occurred in 1988, when the 1988 Agricultural Land Classification (ALC) report (Ref. 12), published by the Ministry of Agriculture Fisheries and Food (MAFF), outlined the revised criteria for grading the quality of agricultural land in England and Wales.
- 4.2.3 The published statistics for each ALC grade in England based on the Pre-1988 Provisional Maps is set out in **Table 4-1** below. These published statistics estimate that 19.3% of all the agricultural land in England is Grades 1 and 2, with 55% of all agricultural land being identified as Grade 3.

Table 4-1: ALC Areas in England based on DEFRA’s Pre-1988 Provisional Maps

ALC Grade (Pre-1988)	Area (Ha)	Proportion % of England
Grade 1	354,562	3.1
Grade 2	1,848,874	16.2
Grade 3	6,290,210	55.0

ALC Grade (Pre-1988)	Area (Ha)	Proportion % of England
Grade 4	1,839,581	16.1
Grade 5	1,100,305	9.6
Total	11,433,532	100

Source: DEFRA Provisional Agricultural Land Classification Pre-1998:

<https://www.data.gov.uk/dataset/952421ec-da63-4569-817d-4d6399df40a1/provisional-agricultural-land-classification-alc>

4.2.4 In addition to the above published statistics for England, Gate Burton Energy Park’s ‘Further Information on Agricultural Land’ (Ref. 2) report also estimated the ALC grades for the County of Lincolnshire by applying the county borders to the Pre-1988 Provisional Maps dataset and then measuring the hectareage for each ALC grade. These calculations are set out in **Table 4-2** below:

Table 4-2: ALC Areas in Lincolnshire based on DEFRA’s Pre-1988 Provisional Maps

ALC Grade (Pre-1988)	Area (Ha)	Proportion % of Lincolnshire
Grade 1	75,757	12.8
Grade 2	186,750	31.6
Grade 3	296,245	50.1
Grade 4	7,448	1.3
Grade 5	0	0.0
Non-agricultural	17,133	2.9
Urban	8,487	1.4
Total Agricultural Land	566,200	95.8
Total	591,820	100

Source: DEFRA Provisional Agricultural Land Classification Pre-1998:

<https://www.data.gov.uk/dataset/952421ec-da63-4569-817d-4d6399df40a1/provisional-agricultural-land-classification-alc>

4.2.5 As set out above, the MAFF 1988 Agricultural Land Classification (ALC) report Ref. 12) outlined revised criteria for grading the quality of agricultural land in England and Wales, where Grade 3 agricultural land was subdivided into Subgrades 3a and 3b. Only Subgrade 3a (together with Grades 1 and 2) is classed as BMV agricultural land.

4.2.6 As set out in Gate Burton Energy Park’s ‘Further Information on Agricultural Land’ (Ref. 2) report, Natural England’s Technical Information Note TIN049

(2012) (Ref. 13) estimates that Grades 1 and 2 agricultural land covers about 21% of all farmland in England, and Subgrade 3a covers about 21%. This means that, by Natural England’s estimates, 42% of agricultural land in England is of BMV quality. Other than these figures (published in 2012), there are no published statistics estimating the percentages of agricultural land by ALC grade using the post 1988 classifications (which split Grade 3 into 3a and 3b). Gate Burton Energy Park’s ‘Further Information on Agricultural Land’ (Ref. 2) report has therefore estimated the possible ALC grading in England by using the Pre-1988 Provisional Maps dataset as a base and updating it to accord with the statistics provided in Natural England’s Technical Information Note TIN049 (2012) (Ref. 13).

4.2.7 To summarise the above:

- a. As set out in **Table 4-1** the Pre-1988 Provisional Maps statistics estimate that 19.3% of the land in England is classed as Grade 1 and 2 agricultural land.
- b. However, Natural England’s 2012 Technical Information Note TIN049 (Ref. 13) (using the post-1988 ALC grading system) estimates that 21% of the land in England is classed as Grades 1 and 2, and that Subgrade 3a accounts for 21%.

4.2.8 In order help determine the cumulative impacts of solar projects on agricultural land, specifically BMV, in Lincolnshire, Gate Burton Energy Park’s ‘Further Information on Agricultural Land’ (Ref. 2) report calculated the estimated area and proportion of agricultural land in Lincolnshire, as set out in **Table 4-3**. For comparative purposes, the Gate Burton report took Natural England’s more recent guidance into account and assumed that 21% of the land in England is classed as Grades 1 and 2; 21% is classed as Subgrade 3a; and decreased the remainder of Grade 3 by the equivalent area. Grades 4 and 5 remained as previously estimated in **Table 4-1**.

Table 4-3: Estimated ALC Areas in Lincolnshire based on Natural England’s Technical Information Note 049 (2012)

ALC Grade (Post 1988)	Area (Ha)	Proportion % of Lincolnshire
Grade 1	82,600	14.6
Grade 2	203,600	36.0
Grade 3a	116,700	20.6
Grade 3b	155,900	27.5
Grade 4	7400	1.3
Grade 5	0	0
Total Agricultural Land	566,200	100

- 4.2.9 The analysis in Gate Burton's report, based on the Pre-1988 Provisional Maps dataset and Natural England's Technical Information Note TIN049 (2012) (Ref. 13) identified that:
- a. 42% of agricultural land in England is estimated to be classed as BMV land; and
 - b. 402,900 ha, or 71.2% of agricultural land in Lincolnshire is estimated to be classed as BMV land.

4.3 The Effect of the Scheme on BMV Agricultural Land Availability in Lincolnshire

- 4.3.1 As identified in **Table 3-1** the Scheme's Principal Site will utilise approximately 56.73 ha of BMV land during the construction, operation and decommissioning of the Scheme (which amounts to 4.2% of all of the land within the Principal Site).
- 4.3.2 Of the 56.73 ha of BMV land required for the Principal Site, only 0.92 ha (0.07% of all land within the Principal Site) may be permanently taken out of use as a result of the Scheme, for the proposed woodland planting. This planting would provide ecological enhancement and landscape and visual screening benefits.
- 4.3.3 When using the estimated percentage proportions of agricultural land, specifically BMV land in Lincolnshire; calculated in Gate Burton Energy Park's 'Further Information on Agricultural Land' (Ref. 2) report and outlined in **Table 4-3** above, the 56.73 ha of BMV land used by the Principal Site during the construction, operation and decommissioning of the Scheme represents 0.01% of Lincolnshire's total BMV land.
- 4.3.4 The potential permanent loss of 0.92 ha of BMV land within the Principal Site represents less than 0.00023% of Lincolnshire's estimated amount of BMV land.
- 4.3.5 In addition, Schedule 4 of the Town and Country Planning (Development Management Procedure (England) Order 2015 (Ref. 14) is relevant, which sets out that local authorities must consult Natural England on development which involves the loss of 20 hectares or more of BMV agricultural land, before the grant of planning permission. The land potentially permanently lost as a result of the Scheme is well below the 20-hectare threshold.
- 4.3.6 Therefore, in conclusion, taking all of the above into account, the Applicant considers the impact of the Scheme on BMV land in Lincolnshire to be minimal and not significant.

5. The Cumulative Impact of the Scheme and other projects in Lincolnshire

5.1 DCO Projects

Overview

- 5.1.1 In order to provide a general indication of the BMV land that might be taken up by solar DCO projects within or partly within Lincolnshire, the Applicant has produced **Figure 1** found in **Annex A**. This figure is similar to the figure produced in Gate Burton Energy Park's 'Further Information on Agricultural Land' (Ref. 2) report, and shows the Order limits for the Scheme in red, alongside the order limits of other solar DCO projects within or partly within Lincolnshire against the background of the Pre-1988 Provisional Mapping showing ALC Grades 1-5. Pre-1988 Provisional Mapping is used because there is no more recent ALC mapping or surveys publicly available within Lincolnshire. **Figure 1** also shows other solar DCO projects within adjacent authorities to Lincolnshire, to provide some context on the number of solar DCO's within the region.
- 5.1.2 In addition to the Scheme, there are 10 other solar NSIPs (at various stages of the DCO process) within Lincolnshire shown on **Figure 1** in **Annex A** which include Gate Burton Energy Park, Mallard Pass Solar Farm, Cottam Solar Project, Heckington Fen Solar Park, West Burton Solar Project, Temple Oaks Renewable Energy Park, Springwell Solar Farm, Beacon Fen Energy Park, Fosse Green Energy and Meridian Solar Farm.
- 5.1.3 There are also three solar DCO projects within Nottinghamshire which are One Earth Solar, Steeple Renewables Project and Great North Road Solar Park, and four others in adjacent authorities to Lincolnshire, which are Little Crow Solar Park (North Lincolnshire), Fenwick Solar Farm (South Yorkshire) and Tween Bridge Solar Farm (North Lincolnshire and South Yorkshire). These have been included within **Figure 1**, and have also been included in **Table 6-3 in Annex A** in order to provide some context and information on solar DCO projects within the surrounding area of Lincolnshire and their impacts on BMV. However, it is noted that these solar DCO projects are not considered within the calculations set out below relating to the cumulative impacts of solar DCO projects on BMV land in Lincolnshire, as they are not located within Lincolnshire.
- 5.1.4 Although **Figure 1** (in **Annex A**) provides a general indication of the BMV land that may be impacted by these solar DCO projects within or partly within Lincolnshire, it does not however indicate the whole area of BMV that will be impacted as some boundaries include grid connection corridors or areas of land where agricultural use would continue. **Figure 1** (in **Annex A**) also does not differentiate between Grade 3a and Grade 3b land, given that it was developed using the Pre-1988 Provisional Mapping dataset.
- 5.1.5 As set out in Natural England's Guide to assessing development proposals on agricultural land (2021), if no suitable data exists (which it doesn't for Lincolnshire), a detailed site-specific survey is required to determine the ALC grade for a particular site. Therefore, because each solar DCO project is

located on agricultural land, they have, or will be undertaking, a site specific ALC survey and will provide an assessment on the potential impacts of their project on BMV land in accordance with national policy.

Methodology and Assumptions

- 5.1.6 In order to assess the likely cumulative impacts of the Scheme and other projects within or partly within Lincolnshire, the Applicant has built on the assessment carried out in Gate Burton Energy Park's 'Further Information on Agricultural Land' (Ref. 2) report. This considered publicly available documents which provided details on the ALC grades and potential impacts on BMV for the solar DCO projects located within or partly within Lincolnshire. The Applicant has therefore reviewed this existing information and provided updated figures where relevant. The results of this updated analysis are set out in **Table 6-3 of Annex A** of this report.
- 5.1.7 When Gate Burton Energy Park carried out their assessment, some of the solar DCO projects were at an early stage with few/no details publicly available regarding the total hectares of solar PV proposed to be used, the details of how many of those hectares are classed as BMV land, and/or whether such use is reversible. For those projects, Gate Burton Energy Park relied on information provided on those project websites, and information available in Preliminary Environmental Impact Reports (PEIR), or scoping reports. The Applicant, in providing an up to date analysis of these projects, has identified that the site areas and/or figures on BMV use for the Cottam Solar Project, Heckington Fen Solar Park, Springwell Solar Farm and West Burton Solar Projects have since been amended.
- 5.1.8 The Applicant has also identified that six new solar DCO projects have recently been publicised within the adjacent authorities to Lincolnshire (Meridian Solar Farm, One Earth Solar, Steeples Renewables Project, Fenwick Solar Farm, Tween Bridge Solar Farm and Great North Road Solar Park). Although these solar DCO projects are not within Lincolnshire, the Applicant has taken the decision to set out details of these new solar DCO projects, along with the updated figures for those solar DCO projects that are within Lincolnshire, within **Table 2 of Annex A**. This is to provide useful information on the amount of solar DCO projects within the region, and their BMV use.
- 5.1.9 The results set out in **Table 6-3 of Annex A** relating to solar DCO projects within or partly within Lincolnshire only have been taken into account in the Applicant's assessment of the cumulative impacts of the Scheme and other solar DCO's in Lincolnshire on BMV land, as set out in this report.
- 5.1.10 In Gate Burton Energy Park's 'Further Information on Agricultural Land' (Ref. 2) report, where projects' publicly available information did not provide data differentiating between Subgrades 3a and 3b, it was assumed that, as a worst case, the land falls into Subgrade 3a and is therefore classed as BMV land. They also assumed that, where no details of agricultural land loss being reversed were set out, all land would be returned to agricultural use at the end of the project's life, on the basis that this is the most likely scenario for the majority of solar projects, and the amount of BMV lost is likely to be minimal. Gate Burton Energy Park's report also discounted areas to be taken up by grid connection corridors because it was assumed that disruption to

the agricultural use of those areas is likely to be limited to the construction phase. The Applicant has adopted the same methodology and assumptions in its analysis of updated information on each of the solar DCO projects identified.

Summary of Results

- 5.1.11 In terms of being able to calculate figures to show the impacts of the Scheme and other solar DCO projects on BMV land in Lincolnshire, as previously mentioned, the Applicant has only considered solar DCO projects that are within or partly within Lincolnshire. Therefore, all other solar DCO's listed in **Table 6-3 of Annex A** that fall outside of Lincolnshire are not included in the calculations. These are included to provide additional context for Interested Parties and the Examining Authority.
- 5.1.12 From the information that is available, the following can be concluded:
- The proposed solar DCO projects within or partly within Lincolnshire would utilise approximately 9243.46 ha of land for solar PV panels.
 - Approximately 3543.79 ha of this land is identified as BMV land.
 - Of this BMV land, only 6.23 ha of BMV land will be permanently lost as a result of the projects.
- 5.1.13 When compared to the total area of BMV land in Lincolnshire (402,900 ha), even if all the solar DCO projects within or partly within Lincolnshire were consented and built, the total area of BMV land identified represents a change of use of 0.8% of the total BMV land in Lincolnshire.
- 5.1.14 The permanent loss of 6.23 ha potentially resulting from the relevant solar DCO projects represents only 0.00154% of the total BMV land in Lincolnshire.
- 5.1.15 These results exclude the site areas and areas of BMV set out in **Table 6-3 of Annex A** for Little Crow Solar Park, One Earth Solar Farm, Steeples Renewables Project, Fenwick Solar Farm, Tween Bridge Solar Farm and Great North Road Solar Park as they are not located within, or partly within Lincolnshire.
- 5.1.16 As outlined above, the Applicant has assumed that where a project is in the early stages of the DCO process and has not yet undertaken ALC surveys, Grade 3 is calculated as being Subgrade 3a (i.e. is BMV), and where the site area for solar PV only is not shown, the whole site area is included in the calculations. Therefore, it is likely, that the actual overall figure for BMV use will be lower than indicated above. The Applicant therefore considers that both the cumulative change of use of BMV land during the lifetime of the DCO schemes, and the permanent loss of BMV land, to be negligible and not significant in the context of the total amount of BMV land in Lincolnshire.

5.2 Town and Country Planning Act (1990) (TCPA) Projects

Overview

- 5.2.1 In line with Gate Burton Energy Park's 'Further Information on Agricultural Land' (Ref. 2) report, the Applicant has also considered ground mounted solar project applications in Lincolnshire which have been dealt with by district authorities under the TCPA (1990). Solar TCPA projects within Nottinghamshire have also been analysed and are set out in **Table 6-2 in Annex A** below, however in line with the methodology used for solar DCO projects, these are not considered in the calculations set out below and are only provided as useful information and context on the amount of solar TCPA projects and their use of BMV land in the region.
- 5.2.2 Gate Burton's report analysed solar TCPA projects up to April 2023, therefore the Applicant has undertaken an updated review of projects set out in the Government's Renewable Energy Planning Database July 2024 Quarterly Extract.
- 5.2.3 The Applicant has also prepared **Figure 2 (in Annex A)** to show the location of solar TCPA projects within Lincolnshire against the Pre-1988 Provisional Mapping dataset. Similarly to the methodology used for reviewing solar DCO applications, the Applicant has taken the findings of the Gate Burton report and undertaken a review of each project's publicly available documents to ensure that the latest ALC data is recorded, and the impacts on BMV land are up to date. The findings of this analysis are set out in **Table 6-2 of Annex A**.

Methodology and Assumptions

- 5.2.4 Similarly to the solar DCO projects, some solar TCPA projects do not have publicly available documents, or do not differentiate between Subgrades 3a and 3b when considering the BMV land used. In those cases, the Applicant has assumed (in line with the Gate Burton Energy Park's 'Further Information on Agricultural Land' (Ref. 2) report) that any Grade 3 land used is Subgrade 3a and is therefore BMV. Where no details of ALC grading are provided for some solar TCPA projects, the Applicant has not included the relevant projects site boundary hectareage in its calculations regarding BMV land, as it is assumed that no BMV land is being used. This follows on from the methodology used in Gate Burton's report.
- 5.2.5 As mentioned above, in addition to solar TCPA projects in Lincolnshire, the Applicant has also considered all ground mounted solar TCPA projects in Nottinghamshire. These are also shown on **Figure 2 (in Annex A)** against the Pre-1988 Provisional Mapping dataset. Although these projects are not relevant for analysing the cumulative impacts of solar projects on BMV land in Lincolnshire, these projects are set out in **Table 6-2 of Annex A** and the Applicant has adopted the same methodology mentioned above for solar TCPA projects in Lincolnshire when presenting their impacts on BMV land.

Summary of Results

- 5.2.6 From the information that is available, the following can be concluded:
- a. all of the proposed solar TCPA projects within Lincolnshire would utilise approximately 167.97 ha of land for Solar PV panels;
 - b. 1107.06 ha of this land is identified as BMV land; and
 - c. of this BMV land, only 1 ha of BMV land is identified as potentially being permanently lost as a result of the projects.
- 5.2.7 When compared to the total area of BMV land in Lincolnshire (402,900 hectares), even if all of the solar TCPA projects were consented and built, the amount of BMV land used represents a change of use of 0.27% of the total BMV land in Lincolnshire.
- 5.2.8 The permanent loss of 1 ha as a result of the solar TCPA projects identified is 0.0002% of the total BMV land in Lincolnshire.
- 5.2.9 These results exclude the site areas and areas of BMV set out in **Table 6-2** of **Annex A** for all solar TCPA projects that are located within Nottinghamshire, as they are not located within, or partly within Lincolnshire.

6. Conclusion

- 6.1.1 From the assessment carried out in this report of solar DCO projects and solar TCPA projects, the Applicant concludes that overall, there is likely to be a negligible impact on BMV land, specifically in Lincolnshire, as a result of these projects. The Applicant notes that the majority of projects will be temporary in nature, and the change of use of agricultural resource, including BMV land, is largely reversible at the end of most of these projects' lifetimes. The Applicant does recognise that some elements of these schemes such as substations, BESS and ecological or environmental enhancement measures such as planting, may not be removed subject to landowner discussions. However, the Applicant has undertaken a conservative assessment based on the information publicly available and concludes that, given the majority of impacts to agricultural land resource are reversible, the residual effect of the projects identified on BMV and non-BMV resource is not significant.
- 6.1.2 A summary of the area and percentage of Lincolnshire's BMV land alongside the solar DCO projects and solar TCPA projects identified as part of this report is set out in **Table 6-1** below.

Table 6-1: Summary of Cumulative Impacts on BMV Land in Lincolnshire

Project	Temporary Change of Use of BMV Land (ha)	Proportion of BMV land in Lincolnshire (%)	Permanent Change of Use/Loss of BMV Land (ha)	Proportion of BMV land in Lincolnshire (%)
Tillbridge Solar Project	59.37	0.015	0.92	0.0002
All solar DCO projects identified in Lincolnshire	1156.01	0.286	6.23	0.00154
All solar TCPA projects identified in Lincolnshire	2437.56	0.605	1	0.0002
Total	3652.94	0.906	8.15	0.00194

- 6.1.3 **Table 6-1** shows that the impacts of the Scheme in isolation on BMV land is considered to be negligible when compared to the total amount of BMV land available in Lincolnshire. Further, even when the solar DCO projects and solar TCPA projects in Lincolnshire identified as part of this report are also considered alongside the Scheme, their cumulative impact on BMV land in Lincolnshire is still considered to be negligible.
- 6.1.4 The Applicant does however recognise the recommendation to consider the availability of land for food production, as set out in footnote 62 of the NPPF, as outlined in Section 2.1 of this report.
- 6.1.5 In this case, the ExA's Report to the Secretary of State in relation to the Gate Burton Energy Park [EN010131] (see paragraphs 3.11.113 and 114) is relevant, which acknowledged concerns raised by Interested Parties (IPs) with respect to the loss of food production. The ExA confirmed that in the case of the Gate Burton Energy Park that it would not undermine national food security in any meaningful way and that *"this would be true even in a cumulative scenario on the basis of the figures produced by the Applicant."*
- 6.1.6 Gate Burton Energy Park's loss of BMV land (which included 2 ha of permanent BMV loss, and 73 ha of BMV land temporarily used by the project) is greater than the impacts arising from the Scheme, and the Applicant therefore considers that the same conclusions can be applied here.
- 6.1.7 Ultimately, as set out in the Secretary of State "Clean Energy Superpower Mission" Statement set out on 18 July 2024, *"the biggest threat to nature and food security and to our rural communities is not solar panels or onshore wind; it is the climate crisis, which threatens our best farmland, food production and the livelihoods of farmers"*.
- 6.1.8 Overall, the Applicant therefore considers that both the:

- a. cumulative change of use of BMV land during the lifetime of the Scheme and other projects within or partly within Lincolnshire; and
- b. potential permanent loss of BMV land resulting from the Scheme and other projects within or partly within Lincolnshire;

is negligible and not significant in the context of the total amount of BMV land in Lincolnshire. The Applicant also considers that this temporary and permanent loss of BMV land would not undermine national food security, and that the implementation of large scale solar projects represents a significant and economically rational step forwards in the fight against the global climate emergency, which is currently the biggest threat to food security.

Annex A – List of DCO and TCPA Projects, and Figures

Table 6-2: List of Solar TCPA Applications within Lincolnshire and Nottinghamshire

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
New Earth Solutions West, High Dike - Solar Panels and Battery Storage	22/1646/CCC and PL/0123/22	North Kesteven District Council	Lincolnshire	Consented (2023)	11.40	4.7	Not known	Not known	Not known	Not known
Ermine Street Farm Solar Park	13/0929/FUL	North Kesteven District Council	Lincolnshire	Consented (2013)	67.81	16.9	0	0	16.9 (100%)	0
Grange Farm (Burton Pedwardine)	12/1242/FUL	North Kesteven District Council	Lincolnshire	Consented (2012)	29	29	Not known	Not known	Not known	Not known
Deepdale Farm	14/0952/FUL	North Kesteven District Council	Lincolnshire	Consented (2014)	19.7	4.9	1 (20%)	0	3.9 (79%)	0
Branston Solar Park	14/0672/FUL	North Kesteven	Lincolnshire	Consented (2014)	43.68	43.68	0	0	0	43.68 (100%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
		District Council								
Branston Solar Park (Extension)	17/1546/FUL	North Kesteven District Council	Lincolnshire	Consented (2018)	97	97	0	0	31 (31%)	69(69%)
White Cross Lane	19/0863/FUL	North Kesteven District Council	Lincolnshire	Consented (2019)	50.3	50.3	0	0	3.4 (7%)	46.9 (93%)
Gorse Lane	19/0060/FUL	North Kesteven District Council	Lincolnshire	Consented (2019)	68	22	0	0	0	68 (100%)
Noble Foods, Hives Lane - Solar Panels	22/1569/FUL	North Kesteven District Council	Lincolnshire	Consented (July 2023)	19	Not known	Not known	Not known	Not known	Not known
Land to North East of Scopwick and West of Railway Line	14/0937/FUL	North Kesteven District Council	Lincolnshire	Consented (2014)	93	93	0	0	33.1 (35.6%)	59.9 (64.4%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Ewerby Thorpe Farm, Sleaford	14/1003/FUL	North Kesteven District Council	Lincolnshire	Consented (2014)	53.9	21.56	0	0	0	21.56 (100%)
Marston Solar Farm	S11/0548	South Kesteven District Council	Lincolnshire	Consented (2015)	10.93	10.93	0	0	Not known	Not known
Limes Farm Solar Farm	S11/0431	South Kesteven District Council	Lincolnshire	Consented (2015)	9	9	Not known	Not known	Not known	Not known
Copley Farm	S13/3273	South Kesteven District Council	Lincolnshire	Consented (2017)	Not known	Not known	Not known	Not known	Not known	Not known
Grantham Solar Farm	S15/0383	South Kesteven District Council	Lincolnshire	Consented (2015)	14.82	14.82	0	0	0	14.82
High Dyke (Mill Farm)	S15/2137	South Kesteven District Council	Lincolnshire	Consented (2015)	15.84	15.84	0	0	1.1 (6.9%)	14.7 (92.8%)
Bypass Solar Farm	S20/1433	South Kesteven	Lincolnshire	Consented (2021)	85.16	85.16	0	0	0	85.16 (100%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
		District Council								
Gonerby Moor, Great Gonerby - Solar Farm	S21/1018	South Kesteven District Council	Lincolnshire	Consented (2021)	78	78	0	0	0	78 (100%)
Honington Grange, Frinkley Lane, Honington	S22/1082	South Kesteven District Council	Lincolnshire	Consented (2022)	0.02	0.02	Not known	Not known	Not known	Not known
Boston Landfill, Wyburton - Solar PV Array	PL/0079/21	Boston Borough Council	Lincolnshire	Consented (2022)	17.7	16.2	Not known	Not known	Not known	Not known
Fen Road	B/13/0345	Boston Borough Council	Lincolnshire	Consented (2013)	4.5	4.5	0	0	4.5 (100%)	0
Leverton Ings	B/13/0306	Boston Borough	Lincolnshire	Consented (2013)	22	9.68	0	0	9.68 (100%)	0

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
		Council								
Nowhere Farm	B/14/0267	Boston Borough Council	Lincolnshire	Consented (2014)	16	6.4	0	0	6.4 (100%)	0
Kirton Solar PV Farm	B/15/0001	Boston Borough Council	Lincolnshire	Consented (2015)	8.7	6.1	0	0	6.1 (100%)	0
Vicarage Drove - Solar farm & Battery storage	B/21/0443	Boston Borough Council	Lincolnshire	Consented (2022)	80.46	80.46	0	0	80.46 (100%)	0
Fen Farm Solar Park	N/036/01536/10	East Lindsey District Council	Lincolnshire	Consented (2010)	2.1	2.1	0	0	2.1 (100%)	0
The Hollies Solar Park - Skegness - extension	S/039/01716/13	East Lindsey District Council	Lincolnshire	Consented (2013)	4.03	3.45	Not known	Not known	Not known	Not known

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
The Hollies Solar Park - Skegness	S/039/00984/12	East Lindsey District Council	Lincolnshire	Consented (2012)	35	19.5	0	0	19.5 (100%)	0
Bicker Fen (previously Manor Farm)	S/051/00772/17	East Lindsey District Council	Lincolnshire	Consented (2017)	34.07	34.07	Not known	Not known	Not known	Not known
Lincoln Farm	S/020/02242/13	East Lindsey District Council	Lincolnshire	Consented (2014)	30.78	30.78	0	0	13.8 (45%)	16.9 (55%)
Primrose Hill Farm	S/216/00470/14	East Lindsey District Council	Lincolnshire	Consented (2014)	7.2	2.4	0	0	2.4 (100%)	0
Grange Farm (Kirkby on Bain)	S/094/01115/14	East Lindsey District Council	Lincolnshire	Consented (2014)	16	16	0	0	16 (100%)	0
Skegness Solar Park	S/023/01092/14	East Lindsey District Council	Lincolnshire	Consented (2014)	16	16	0	0	3.2 (20%)	12.8 (80%)
High Leas	N/161/01563/14	East Lindsey District Council	Lincolnshire	Consented (2014)	14	14	Not known	Not known	Not known	Not known
Yarburgh Grove Farm	N/218/00928/14	East Lindsey District Council	Lincolnshire	Consented (2014)	16.8	16.8	0	0	16.8 (100%)	0

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Canopus Farm	S/054/02433/14	East Lindsey District Council	Lincolnshire	Consented (2015)	10	10	0	0	10 (100%)	0
Land Off Folly Lane	S/203/01106/15	East Lindsey District Council	Lincolnshire	Consented (2015)	8.26	8.26	0	0	0	8.26 (100%)
Low Farm Solar Farm	S/195/02340/20	East Lindsey District Council	Lincolnshire	Consented (2021)	73.72	73.72	0	0	73.72 (100%)	0
Hatton Solar Farm	S/079/01078/22	East Lindsey District Council	Lincolnshire	Application submitted (2022)	76	76	0	0	1.1 (79%)	0.3 (21%)
Mallows Lane - Solar Farm & Battery Storage	S/152/01297/22	East Lindsey District Council	Lincolnshire	Consented (2022)	20	20	0	0	20 (100%)	0
Applebys Ices, Conisholme	N/036/01358/20	East Lindsey District Council	Lincolnshire	Consented (2020)	0.04	0.04	Not known	Not known	Not known	Not known
Moulton Bulb, Long	H13-0190-23	South Holland District Council	Lincolnshire	Consented	2.24	2.24	0	0	2.24	0

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Lane - Solar Array				(2023)						
Long Sutton Butterfly And Wildlife Park	H11-0817-10	South Holland District Council	Lincolnshire	Consented (2011)	4.1	4.1	Not known	Not known	Not known	Not known
Long Sutton Butterfly And Wildlife Park (extension)	H11-0206-11	South Holland District Council	Lincolnshire	Consented (2011)	2.6	2.6	Not known	Not known	Not known	Not known
Decoy Farm	H02-0454-14	South Holland District Council	Lincolnshire	Consented (2014)	24.5	24.5	0	0	24.5 (100%)	0
Grange Farm (Lincolnshire)	H20-0937-13	South Holland District Council	Lincolnshire	Consented (2013)	20	20	0	0	20 (100%)	0
Cowbridge Road, Bicker Fen - Solar Array	H04-0849-22 B/22/0356	South Holland District Council Boston Borough Council	Lincolnshire	Consented (2023)	97.3	97.3	0	0	97.3 (100%)	0

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Sutton Bridge Solar Farm	H18-1126-20	South Holland District Council	Lincolnshire	Consented (2021)	118.3	118.3	0	0	118.3 (100%)	0
Gunthorpe Road Solar Farm	H18-0741-21	South Holland District Council	Lincolnshire	Consented (2023)	78.64	78.64	0	0	78.64 (100%)	0
Top Farm, Short Ferry Road - Solar PV Arrays	146393	West Lindsey District Council	Lincolnshire	Consented (2023)	1.29	1.29	Not known	Not known	Not known	Not known
Danes Farm - extension	131968	West Lindsey District Council	Lincolnshire	Consented (2014)	18.58	18.58	0	0	0	18.58 (100%)
Danes Farm	126864	West Lindsey District Council	Lincolnshire	Consented (2011)	10.1	10.1	0	0	0	10.1 (100%)
Stow Solar Farm	131968	West Lindsey District Council	Lincolnshire	Consented (2014)	7.58	7.58	0	0	0	7.58 (100%)
Fiskerton Airfield (Phase 1 and 2)	130671	West Lindsey District Council	Lincolnshire	Consented (2014)	70	70	0	0	0	70 (100%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
The Old Airfield Solar Photovoltaic Farm	142117	West Lindsey District Council	Lincolnshire	Consented (2021)	84	84	0	0	0	84 (100%)
Green Lane Solar	S23/0689	South Kesteven District Council	Lincolnshire	Application Submitted (2023)	58	58	0	0	8.6 (14.8%)	46.5 (80.17%)
Green Lane Solar	S23/1934	South Kesteven District Council	Lincolnshire	Consented (2024)	58	58	0	0	8.6 (14.8%)	46.5 (80.17%)
Immingham Solar Farm - Solar Farm	DM/0108/24/FUL	North East Lincolnshire	Lincolnshire	Application Submitted	109.55	109.55	0	0	43 (39.82%)	65 (60.19%)
Manor Golf Course, Barton Street - Solar Panels	DM/0150/24/FUL	North East Lincolnshire	Lincolnshire	Application Submitted	6.5	4	0	0	0	6.5 (100%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Carr Lane - Solar Farm	PA/2021/1359	North Lincolnshire	Lincolnshire	Consented	14.02	14.02	0	0	0	14.02 (100%)
A Poucher & Sons, Lodge Farm - Solar Panels	147376	West Lindsey	Lincolnshire	Consented	Not known	Not known	Not known	Not known	Not known	Not known
Highgate Lane, Normanby-By-Spital - Solar Photovoltaic Farm	WL/2024/00415	West Lindsey	Lincolnshire	Application Submitted	17	17	0	0	2 (11.76%)	15 (88.25%)
Mareham Lane, Solar PV Panels	23/1419/FUL	North Kesteven	Lincolnshire	Application Submitted	77	77	0	0	0	77 (100%)
Ash Tree Solar Farm & Battery Storage	S23/2199	South Kesteven	Lincolnshire	Application Submitted	144	140	0	0	21.2 (14.7%)	137.2 (85.3%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Holbeach And Elloe Hospital Trust, Boston Road North - Solar Panels	H09-0665-23	South Holland	Lincolnshire	Consented	1.2	1.2	Not known	Not known	Not known	Not known
Caudwell Farm, Hollbeach - Solar Array	H09-0699-23	South Holland	Lincolnshire	Application Submitted	112.3	112.3	0	0	112.3 (100%)	0
Bradley Road - Solar Farm	DM/1156/23/FUL	North East Lincolnshire	Lincolnshire	Consented	81.7	73.7	0	0	7.6 (10.3%)	66.1 (89.67)
Stow Park Farm, Stow Park - Solar Panels	WL/2024/00395	West Lindsey	Lincolnshire	Application Submitted	85	85	0	0	15 (17.65%)	70 (82.35%)
Winterton Road, Roxby - Solar Farm	PA/2024/129	North Lincolnshire	Lincolnshire	Application Submitted	59	59	0	0	59 (100%)	0

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Weelsby Pumping Station, Hewitts Avenue - Solar Panels	DM/0946/22/CEA	North East Lincolnshire	Lincolnshire	Consented	Not known	Not known	Not known	Not known	Not known	Not known
Wittering Ford Road, Barnack - Solar Photovoltaic Farm	23/00829/FUL	Peterborough	Lincolnshire	Consented	116	116	0	0	61 (52.28%)	55 (47.42%)
Crow Trees Farm	V/2014/0188	Ashfield District Council	Nottinghamshire	Consented (2014)	7.64	2.6	0	0	0	2.6 (100%)
Barnby Moor	13/01311/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2014)	8.7	8.7	0	0	8.7 (100%)	0
Little Morton Solar Farm	13/01113/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2014)	28	0.97	0	0	0.97 (100%)	0
Westwood Farm Solar Park	13/01182/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2013)	8.8	2.8	0	0	2.8 (100%)	0

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Walmoor Farm solar park	14/00034/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2014)	7.3	7.3	0	0	7.3 (100%)	0
Walkers Wood Solar Park	14/00681/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2014)	57.4	57.4	0	0	24 (43%)	32.6 (57%)
Hunciecroft Farm	14/01015/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2014)	17.6	17.6	0	0	8.3 (47%)	9.3 (53%)
Jubilee Farm, Barnby Moor	14/01036/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2015)	14	14	0	0	0	14 (100%)
Welbeck Solar / Hazel Gap	14/01030/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2015)	32.3	32.3	0	0	1.5 (5%)	30.8 (95%)
Tiln Farm solar park	13/00997/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2013)	22.19	22.19	0	0	3.1 (13%)	19.2 (87%)
Tiln Farm Retford (extension)	15/00228/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2015)	0.98	0.98	0	0	0.13 (13%)	0.85 (87%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Tiln Farm Solar Farm (further extension)	20/01405/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2021)	89	89	0	0	7 (8%)	82 (92%)
Misson Solar Farm	15/00215/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2015)	15.84	6.47	0	0	0.81 (12.6%)	5.26 (81.4%)
Wood Lane Solar Farm	20/00117/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2020)	94.7	32	0	0	2 (6%)	30 (94%)
Tuxford Road Solar Farm	21/01147/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2021)	120.74	120.74	0	0	0	120.74 (100%)
Gainsborough Road, Saundby - Solar Farm/Bumble Bee Solar Farm	22/00358/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2022)	154.7	154.7	0	0	0	154.7 (100%)
High Marnham -	22/00707/FUL	Bassetlaw District Council	Nottinghamshire	Consented (2023)	56	56	0	0	30 (53%)	26 (47%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Solar Photovoltaic Farm										
Frithwood Farm, Frithwood Lane - Solar Farm	22/00583/FUL	Bolsover Council	Nottinghamshire	Consented (2023)	46	46	0	0	24.4 (53%)	21.6 (47%)
Long Lane Solar Farm / Nottingham Brick Works	15/00525/FUL	Broxtowe Borough Council	Nottinghamshire	Consented (2016)	24.5	24.5	0	0	10.78 (44%)	13.72 (56%)
Gedling Solar Farm	2012/1335	Gedling Borough Council	Nottinghamshire	Consented (2013)	14	14	0	0	0	14 (100%)
Welbeck Colliery	2012/0557/NT	Mansfield District Council	Nottinghamshire	Consented (2013)	Not known	Not known	Not known	Not known	Not known	Not known
SPF Thirty Acres Farm	2015/0451/NT	Mansfield District Council	Nottinghamshire	Consented (2015)	Not known	Not known	Not known	Not known	Not known	Not known

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Land At Debdale Lane	2015/0449/NT	Mansfield District Council	Nottinghamshire	Consented (2015)	17.8	17.8	Not known	Not known	Not known	Not known
Littlewood Lane Solar	2015/0527/NT	Mansfield District Council	Nottinghamshire	Consented (2015)	11.62	11.62	Not known	Not known	Not known	Not known
Knapthorpe Grange, Caunton - Solar Farm	22/00975/FULM	Newark & Sherwood District Council	Nottinghamshire	Application Submitted (2022)	74.38	74.38	0	0	9.52 (13%)	64.86 (87%)
Foxholes Farm, Bathley Lane - Solar Farm	22/01983/FULM	Newark & Sherwood District Council	Nottinghamshire	Application Submitted (2022)	75.38	75.38	0	0	39.8 (53%)	35.58 (47%)
Grange Solar Farm	11/00333/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2011)	14.6	14.6	0	0	14.6 (100%)	0 (100%)
Egmanton Solar Farm	13/01422/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2014)	23.6	23.6	0	0	23.6 (100%)	0

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Featherstone House Farm	13/00893/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2016)	10	10	Not known	Not known	Not known	Not known
Netherfield Lane	14/01546/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2014)	30.8	30.8	0	0	0	30.8 (100%)
Eakring Solar Farm	14/00839/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2014)	27	8.4	0	0	0	8.4 (100%)
Egmanton Solar Farm	14/00975/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2014)	23.6	23.6	0	0	23.6 (100%)	0
Bilsthorpe Quarry Solar Park	12/01594/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2013)	19.8	19.8	0	0	0	19.8 (100%)
Rufford Lane	15/00083/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2015)	6.5	6.5	0	0	0	6.5 (100%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Land South Off Ollerton Road	15/00875/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2016)	10	10	0	0	0	10 (100%)
Bilsthorpe (Land off Forest Lane)	15/01206/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2016)	9.34	9.34	0	0	5.6 (60%)	3.74 (40%)
Inkersall Grange Farm	19/01165/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2019)	79.5	79.5	0	0.2 (1%)	0	79.3 (99%)
The Grange	19/01408/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2019)	95.7	95.7	0	0.2 (1%)	20 (21%)	75.5 (78%)
Barnby Manor	18/02319/FUL	Newark and Sherwood District Council	Nottinghamshire	Consented (2019)	0.31	0.31	Not known	Not known	Not known	Not known
Winkburn Estate Solar Farm	20/02501/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2021)	65.7	65.7	0	0	0	70 (100%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Cotmoor Lane	20/01242/FULM	Newark and Sherwood District Council	Nottinghamshire	Consented (2022)	98	98	0	1 (1%)	0	97 (99%)
Flash Farm, Micklebarrow Hill - Solar Panels	22/02014/FUL	Newark and Sherwood District Council	Nottinghamshire	Consented (2023)	0.06	0.06	Not known	Not known	Not known	Not known
Two Oaks Quarry, Coxmoor Road - Solar Array	F/4478	Nottinghamshire County Council	Nottinghamshire	Consented (2024)	6.27	1.71	0	0	0.85 (50%)	0.85 (50%)
Lodge Farm - Orston	13/01609/FUL	Rushcliffe Borough Council	Nottinghamshire	Consented (2013)	25.1	8.85	0	0	8.85 (100%)	0
Cotgrave solar farm	14/01221/FUL	Rushcliffe Borough Council	Nottinghamshire	Consented (2014)	12.2	12.2	0	0	12.2	0
Fair Oaks	23/00254/FUL	Rushcliffe	Nottinghamshire	Consented (2023)	82	82	0	0	82	0

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Renewable Energy Park		Borough Council								
Radcliffe Solar Farm	14/01228/FUL	Rushcliffe Borough Council	Nottinghamshire	Consented (2014)	9.8	9.8	0	0	9.8 (100%)	0
Langar Lane	14/01594/FUL	Rushcliffe Borough Council	Nottinghamshire	Consented (2014)	19.34	19.34	0	0	0	19.34 (100%)
Elton solar farm	14/01739/FUL	Rushcliffe Borough Council	Nottinghamshire	Consented (2015)	24.05	24.05	0	0	24.05 (100%)	0
Stragglethorpe Road farm	15/01776/FUL	Rushcliffe Borough Council	Nottinghamshire	Consented (2015)	12.2	12.2	0	0	12.2 (100%)	0
Holme Farm Solar Park	15/01971/FUL	Rushcliffe Borough Council	Nottinghamshire	Consented (2015)	6.7	6.7	0	0	0	6.7 (100%)
Sharpley Hill Solar Farm	21/00703/FUL	Rushcliffe Borough	Nottinghamshire	Consented (2021)	10.8	10.8	0	0	0	10.8 (100%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
		Council								
Church Farm, Kingston On Soar - Solar Photovoltaic Farm	22/00809/FUL	Rushcliffe Borough Council	Nottinghamshire	Consented (2022)	60.94	60.94	0	0	21.3 (35%)	39.7 (65%)
Highfields Farm - Solar Farm & Battery Storage	22/00303/FUL	Rushcliffe Borough Council	Nottinghamshire	Consented (2023)	81.78	81.78	0	0	9 (11%)	72.8 (89%)
New Lane, Whatton - Solar Photovoltaic System	21/03114/FUL	Rushcliffe Borough Council	Nottinghamshire	Consented (2022)	0.7	0.7	0	0	0	0.7 (100%)
Radcliffe Road, Holme Pierrepont -	22/01511/FUL	Rushcliffe Borough Council	Nottinghamshire	Consented (2022)	7.1	6.9	0	0	0	6.9 (100%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Solar Farm										
Adj To The A614 - Solar	24/00384/FUL	Bassetlaw	Nottinghamshire	Application Submitted	88.21	73.22	0	0	21.7 ha (24.6%)	66.5 ha (75.3%)
Bracks Solar Farm	23/00656/FUL	Bassetlaw	Nottinghamshire	Consented	37.76	37.76	0	0	7.79 ha; 20.63 %	29.93 ha; 79.26%
Rayton Farm Lane - Solar Farm	23/01444/FUL	Bassetlaw	Nottinghamshire	Consented	47.8	47.8	0	0	27.7 ha (58.3%)	20.1 ha (41.7%)
Main Street, Kelham - Solar Farm & Battery Energy Storage	23/01837/FULM	Newark and Sherwood	Nottinghamshire	Application Submitted	65.7	65.7	0	0	60 (92%)	35.4 (8%)
Eastcroft Municipal Depot	Nottingham	Nottinghamshire City Council	Nottinghamshire	Application Submitted	Not known	Not known	Not known	Not known	Not known	Not known
Steeley Lane, Steeley -	23/01399/FUL	Bassetlaw	Nottinghamshire	Application Submitted	21.5	21.5	0	0	8.2 (38.1%)	13.3 (61.9%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Solar Photovoltaic Farm										
Ratcliffe On Soar Power Station - Solar Farm	22/01339/LDO	Rushcliffe	Nottinghamshire	Consented	265	10	0	0	0.34 (3.6%)	9.64 (96.4%)
Heron Solar Farm & Battery Storage	23/02250/FUL	Rushcliffe	Nottinghamshire	Application Submitted	56	51.4	0	0	32.3 (63%)	19.1 (37%)
Old Wood Energy Park - Solar Pv Panel	24/00161/FUL	Rushcliffe	Nottinghamshire	Application Submitted	100.96	98	0	0	0	98 (100%)
Long Whatton Solar Farm	P/23/0379/2	Charnwood Borough Council	Leicestershire	Application Submitted (2023)	97.1	97.1	0	0	17	80.1
Jericho Covert Solar	20/01182/FUL	Melton Borough	Leicestershire	Consented	74	74	0	0	0	74 (100%)

Project Name	LPA Reference	District Authority	County	Planning Status	Total Site Area (ha)	Total Area of Solar PV Panels (ha)	Permanent loss of BMV land (ha)	Permanent loss of non BMV land (ha)	Temporary change of use of BMV land (ha)	Temporary change of use of non BMV land (ha)
Farm		Council								
Ranksborough Farm	2019/1249/MAF	Rutland	Rutland	Consented (2019)	51.6	51.6	0	0	0	51.6 (100%)

Table 6-3: List of Solar DCO Applications within Lincolnshire and Nottinghamshire

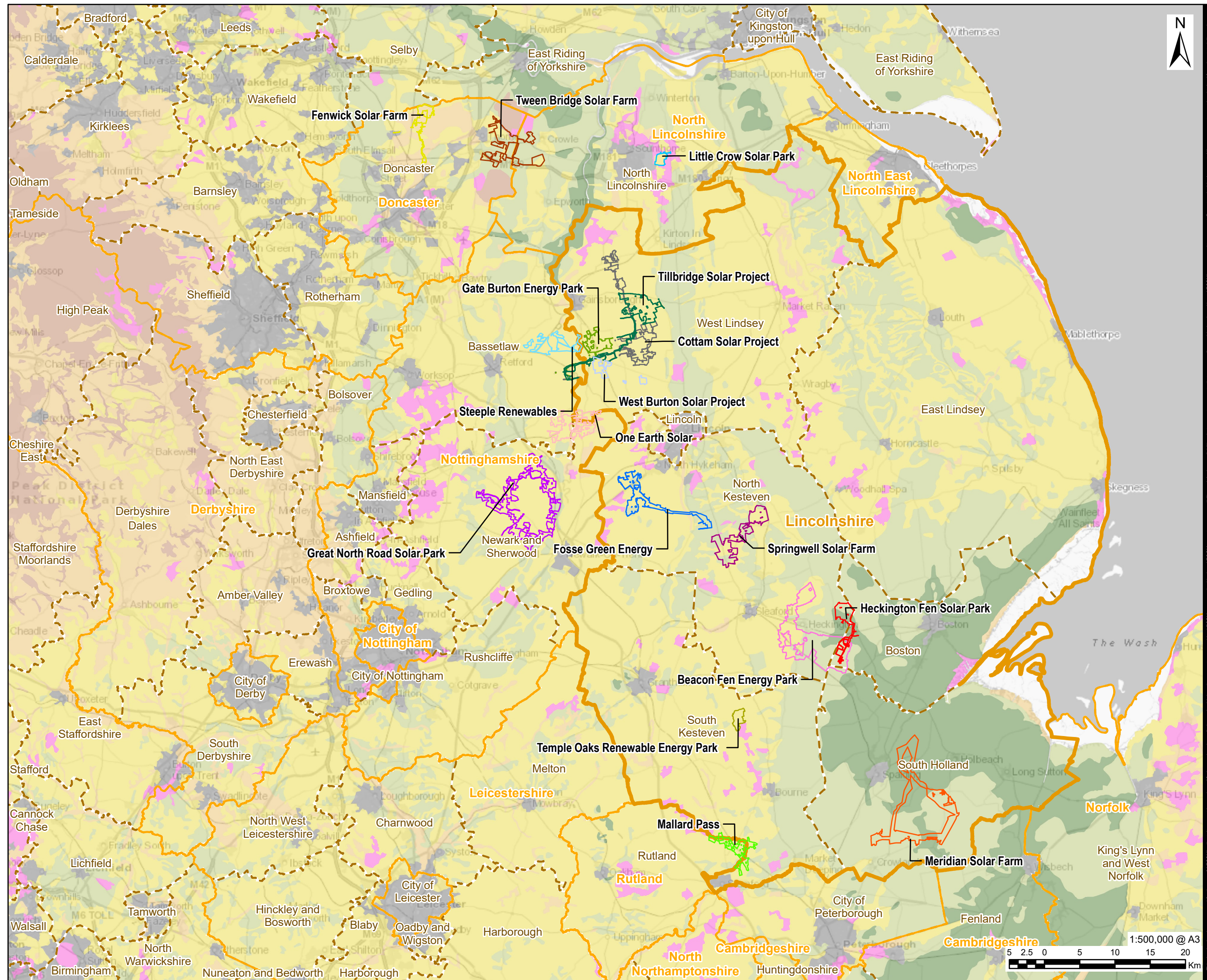
Project Name	LPA Reference	County	Planning Status	Total Site Area (ha)	Total area of solar	Permanent loss of BMV land	Permanent loss of non-BMV land	Temporary change of use of BMV land	Temporary change of use of non BMV land
Meridian Solar Farm	EN010169	Lincolnshire	Pre-application	1100	1100	0	0	Part of Solar PV Site has been surveyed which found 157.6 ha of BMV land. Applicant estimates that 1100 is BMV.	0

Project Name	LPA Reference	County	Planning Status	Total Site Area (ha)	Total area of solar	Permanent loss of BMV land	Permanent loss of non-BMV land	Temporary change of use of BMV land	Temporary change of use of non BMV land
Fosse Green Energy	EN010154	Lincolnshire	Pre-application	not known (cable route corridor not yet determined)	1,003	Estimated 0. Applicant assumes all land to be returned at project end.	Estimated 0. Applicant assumes all land to be returned at project end.	Not yet known. Site is located on Grade 3 and Grade 2 agricultural land. Estimated 1,003 (100%)	Estimated 0
Heckington Fen Solar Park	EN010123	Lincolnshire	Decision	644.79	524	2.8 (0.5%)	17.4 (3.3%)	254.2 (48.5%)	249.6 (47.6%)
Temple Oaks Renewable Energy Park	EN010126	Lincolnshire	Pre-application	350	280	0	Estimated 0. Applicant assumes all land to be returned.	0	280 (100%)
Springwell Solar Farm	EN010149	Lincolnshire	Pre-application	1971.45	816	Estimated 0. Applicant assumes all land to be returned	Estimated 0. Applicant assumes all land to be returned at project end.	Estimated 354.9 (43.51%)	Estimated 460.8 (56.49%)

Project Name	LPA Reference	County	Planning Status	Total Site Area (ha)	Total area of solar	Permanent loss of BMV land	Permanent loss of non-BMV land	Temporary change of use of BMV land	Temporary change of use of non BMV land
						at project end.			
Beacon Fen Energy Park	EN010151	Lincolnshire	Pre-application	4683.22 (Cable Route not narrowed or defined yet)	1,036	Estimated 0. Applicant assumes all land to be returned.	Estimated 0. Applicant assumes all land to be returned.	233.15 (22.7%) (solar array area only)	791.8 (77.3%) (solar array area only)
Mallard Pass Solar Farm	EN010127	Lincolnshire and Rutland	Consented	852	531	0	0	216 (40.6%)	316 (59.5%)
Gate Burton Energy Park	EN010131	Lincolnshire and Nottinghamshire	Consented	824	652	1.31 (0.2%)	3.65 (0.5%)	72.18 (11%)	552.88 (84.8%)
Cottam Solar Project	EN010133	Lincolnshire and Nottinghamshire	Consented	1451.23	1179.7	0	0	48.1 (4.1%)	1,131.6 (95.9%)
West Burton Solar Project	EN010132	Lincolnshire and Nottinghamshire	Decision	886.42	769.08	0	0	199.5 (26.4%)	557 (73.5%)
Tillbridge Solar Project	EN010142	Lincolnshire and Nottinghamshire	Examination	1660	1344.76	0.92 (0.07%)	2.54 ha (0.19%)	55.81	1151.08

Project Name	LPA Reference	County	Planning Status	Total Site Area (ha)	Total area of solar	Permanent loss of BMV land	Permanent loss of non-BMV land	Temporary change of use of BMV land	Temporary change of use of non-BMV land
One Earth Solar	EN010159	Nottinghamshire	Pre-application	1500	1150	Estimated 0	Estimated 0	498 (55.2%) (Note: 1,263ha surveyed so far)	565.9 (44.8%) (Note: 1,263ha surveyed so far)
Steeple Renewables	EN010163	Nottinghamshire	Pre-application	943.4	943.4	Not yet known	Not yet known	Not yet known	Not yet known
Little Crow Solar Park	EN010101	North Lincolnshire Unitary Authority (outside of Lincolnshire CC)	Consented	224.7	224.7	1 (0.4%)	0	36.6 (16.2%)	188.1 (83.7%)
Fenwick Solar Farm	EN010152	South Yorkshire	Pre-application	2333	323	Not known	Not known	Not known	Not known
Tween Bridge Solar Farm	EN010148	North Lincolnshire and North Yorkshire	Pre-application	1500	1500	Not known	Not known	Not known	Not known
Great North Road Solar Park	EN010162	Nottinghamshire	Pre-application	2900	1500	Not known	Not known	Not known	Not known

Revision: 01 Drawn: LL Checked: HW Approved: AT Date: 2024-10-23
 Filename: \\na.aecomnet.com\ifs\EME\London-UK\ON061Legacy\UKLON061-V1\DP\Library\GIS_DATA\Projects\Greta\Layout\Tillbridge Solar\ALC_Reports\241014_Tillbridge_ALC_Figure1_SolarDCOs.mxd



AECOM

PROJECT
 Tillbridge Solar Project

CLIENT
 Tillbridge Solar Ltd

CONSULTANT
 Aldgate Tower
 2, Leman Street
 London, E1 8FA
 United Kingdom
 T +44-0207-645-2000

LEGEND

- Lincolnshire County Boundary
- Other County Boundaries
- District Boundary
- Beacon Fen Energy Park
- Cottam Solar Project
- Fenwick Solar Farm
- Fosse Green Energy
- Gate Burton Energy Park
- Great North Road Solar Park
- Heckington Fen Solar Park
- Little Crow Solar Park
- Mallard Pass
- Meridian Solar Farm
- One Earth Solar
- Springwell Solar Farm
- Steeple Renewables
- Temple Oaks Renewable Energy Park
- Tillbridge Solar Project
- Tween Bridge Solar Farm
- West Burton Solar Project

Agricultural Land Classification

- Grade 1
- Grade 2
- Grade 3
- Grade 4
- Grade 5
- Non Agricultural
- Urban

NOTES

© Crown copyright and database rights 2022. Ordnance Survey 0100031673.
 © Natural England copyright. Contains Ordnance Survey data © Crown copyright and database right [2023].
 All boundaries except Gate Burton Energy

ISSUE PURPOSE
 Annex A

PROJECT NUMBER
 60677969

FIGURE TITLE
 Solar DCO Projects within or surrounding Lincolnshire

FIGURE NUMBER
 Figure 1

7. References

- Ref. 1 The Stationary Office (2008). Planning Act 2008. Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents> [Accessed 01 November 2024]
- Ref. 2 National Infrastructure Planning. Gate Burton Energy Park [EN010131] Deadline 2 Submission 8.11 Further Information on Agricultural Land. Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010131/EN010131-000882-EN010131%208.11%20Technical%20Note%20-%20Cumulative%20Impact%20on%20BMV%20Agricultural%20Land.pdf> [Accessed 01 November 2024]
- Ref. 3 Department for Energy Security & Net Zero (2023). Overarching National Policy Statement for Energy (EN-1). Available at: <https://assets.publishing.service.gov.uk/media/65bbfbd709fe1000f637052/overarching-nps-for-energy-en1.pdf> [Accessed 01 November 2024]
- Ref. 4 Department for Energy & Net Zero (2023). National Policy Statement for Renewable Energy Infrastructure (EN-3). Available at: <https://assets.publishing.service.gov.uk/media/65a7889996a5ec000d731aba/nps-renewable-energy-infrastructure-en3.pdf> [Accessed 01 November 2024]
- Ref. 5 Department for Energy Security and Net Zero (2023). National Policy Statement for Electricity Networks (EN-5). Available at: <https://assets.publishing.service.gov.uk/media/65a78a5496a5ec000d731abb/nps-electricity-networks-infrastructure-en5.pdf> [Accessed 01 November 2024]
- Ref. 6 Natural England. Provision Agricultural Land Classification (ALC) (England). Available at: <https://naturalengland-defra.opendata.arcgis.com/datasets/Defra::provisional-agricultural-land-classification-alc-england/about> [Accessed 01 November 2024]
- Ref. 7 GOV.UK. Natural England – Guidance to assessing development proposals on agricultural land (updated 5 February 2021). Available at: <https://www.gov.uk/government/publications/agricultural-land-assess-proposals-for-development/guide-to-assessing-development-proposals-on-agricultural-land> [Accessed 01 November 2024]
- Ref. 8 Department for Levelling Up, Housing and Communities (2023). National Planning Policy Framework. Available at: https://assets.publishing.service.gov.uk/media/669a25e9a3c2a28abb50d2b4/NPPF_December_2023.pdf [Accessed on 01 November 2024]
- Ref. 9 UK Parliament. Solar and protecting our Food Security and Best and Most Versatile (BMV) Land. Statement made on 15 May 2024. Available at: <https://questions-statements.parliament.uk/written-statements/detail/2024-05-15/hcws466> [Accessed 01 November 2024]
- Ref. 10 UK Parliament. Clean Energy Superpower Mission. Volume 752: debated on Thursday July 2024. Available at:

<https://hansard.parliament.uk/Commons/2024-07-18/debates/1B2ACB9-1455-4C86-8E2F-5E763B38E888/CleanEnergySuperpowerMission>
[Accessed 01 November 2024]

- Ref. 11 GOV.UK. Research and analysis – Renewable Energy Planning Database: quarterly extract. Available at:
<https://www.gov.uk/government/publications/renewable-energy-planning-database-monthly-extract> [Accessed 01 November 2024]
- Ref. 12 Natural England. Agricultural Land Classification detailed Post 1988 ALC survey. Available at:
<https://publications.naturalengland.org.uk/category/6249382855835648>
[Accessed 01 November 2024]
- Ref. 13 Natural England. Agricultural Land Classification: protecting the best and most versatile agricultural land (TIN049). Available at:
<https://publications.naturalengland.org.uk/publication/35012> [Accessed 01 November 2024]
- Ref. 14 The Stationary office (2008). The Town and Country Planning (Development Management Procedure) (England) Order 2015. Available at:
<https://www.legislation.gov.uk/uksi/2015/595/contents> [Accessed 01 November 2024]

Appendix C Tillbridge Solar Project Acoustics Technical Note

Tillbridge Solar Project Acoustics Technical Note

East Cottage on Northlands Road

Project number: 60682158

May 2024

Quality information

Prepared by

Edward Rowland, BSc,
AMIOA
Acoustic Consultant

Checked by

Matt Muirhead PhD MIOA
Associate Director

Verified by

Eddie Robinson BSc
MIOA
Associate Director

Approved by

Neil Tittley
Technical Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position
1	12/02/2024	1 st version	NT	Neil Tittley	Technical Director
2	23/02/2024	Updated following client meeting	NT	Neil Tittley	Technical Director
3	13/05/24	Updated following Clarke Saunders review	NT	Neil Tittley	Technical Director

Table of Contents

Executive Summary	4
1. Introduction.....	4
2. Policy Compliance	4
3. Baseline Noise Monitoring	5
4. Operational Plant Noise Modelling	7
5. Mitigation	10
6. Conclusions	12
Appendix A 1/3-Octave Band Sound Measurements.....	13
Appendix B 1/3-Octave Band Noise Source Data and Results for Scenario 3a	16
Appendix C Illustrative Site Layout with Distance to Nearest Noise Generating Plant for Scenario 3a.....	17
Appendix D 1/3-Octave Band Measured and Predicted Noise Levels for Scenario 3a	18
Appendix E Noise Contour Plots for Scenario 3a	20

Figures

Figure 3-1 Noise Monitoring and Receptor Location	6
Figure A-1 ML7 time history plot.....	15
Figure D-1 Weekday maximum and minimum measured $L_{A90,1h}$ 1/3-octave Band Noise Levels (A-weighted) and Predicted Noise	18
Figure D-2 Weekend maximum and minimum measured $L_{A90,1h}$ 1/3-octave Band Noise Levels (A-weighted) and Predicted Noise	19
Figure E-1: All Noise Sources	20
Figure E-2: Substation Noise Only	21
Figure E-3: Inverter and BESS Noise Only	22

Tables

Table 3-1. ML7 Baseline Noise Level 1-hour Summary	7
Table 3-2. ML7 Baseline Noise Level Period Summary	7
Table 4-1: Noise Modelling Results	9
Table A-1: Measured Weekday Ambient (L_{Aeq}) Average 1/3-octave Band Data	13
Table A-2: Measured Weekend Ambient (L_{Aeq}) Average 1/3-octave Band Data	13
Table A-3: Measured Weekday Background (L_{A90}) Average 1/3-octave Band Data	13
Table A-4: Measured Weekend Background (L_{A90}) Average 1/3-octave Band Data	14
Table B-1: 1/3-octave Band Noise Source Data	16
Table B-2: Predicted 1/3-octave Band Noise Specific Noise Levels at East Cottage	16

Executive Summary

This technical note relates to noise levels at East Cottage on Northlands Road resulting from the operation of new infrastructure (a substation, solar station, and battery energy storage system (BESS)) associated with Tillbridge Solar Project (hereafter referred to as the 'Scheme').

The predicted noise has been modelled at East Cottage during operation of the Scheme for different scenarios to test the effect of locating some of the noise source equipment further from East Cottage.

The modelling shows that the amended illustrative layout of the Scheme, which has been incorporated within the DCO application, would lead to lower predicted noise levels at East Cottage compared to alternative scenarios. As a result, Tillbridge Solar Limited (hereafter referred to as 'the Applicant') has included a commitment in the Development Consent Order (DCO) application to avoid solar stations and BESS in Field 92 where Substation A is proposed.

Furthermore, noise levels at East Cottage can be restricted to 26-27 dB(A), which is typical of the existing external night-time background sound. This commitment would be tested and verified through further modelling the Scheme layout and chosen equipment during detailed design. At that stage, the Applicant would be able to check the effect of the selected equipment using known sound power levels, along with the precise location of the BESS and solar stations, to deliver a Scheme that achieves a typical night-time background sound level at East Cottage. Spot check monitoring would also be carried out during operation at East Cottage.

1. Introduction

- 1.1.1 This technical note relates to a concern raised by a stakeholder who lives near the Principal Site of the proposed Tillbridge Solar Project ('the Scheme') regarding how noise emissions may affect the occupiers of East Cottage on Northlands Road. This is represented by receptor R15 in the Preliminary Environmental Information Report (PEIR) as well as the Environmental Statement (ES), which has been submitted with the application for development consent.
- 1.1.2 This technical note provides a summary of the existing noise climate to confirm noise levels without the Scheme and the results of noise modelling of the operational Scheme. The information is intended to support further discussions with the stakeholder on how the best practicable noise environment can be provided at East Cottage whilst not unduly constraining the proposed Scheme.

2. Policy Compliance

- 2.1.1 The assessment of noise and the methodology adopted in the ES forming part of the DCO application submission is in accordance with national noise policy. This includes the Noise Policy Statement for England¹ (NPSE), which defines noise effects in terms of the following concepts:
 - Lowest Observed Adverse Effect Level (LOAEL) – the level above which, as an average response, adverse effects on health and quality of life can be detected; and
 - Significant Observed Adverse Effect Level (SOAEL) – the average response level above which, as an average response, significant adverse effects on health and quality of life occur.
- 2.1.2 For assessment purposes, with reference to guidance from BS 4142, BS 8233, and World Health Organisation (WHO) guidelines, the LOAEL has been set as equal to the typical background level ($L_{A90, T}$) with minimum rating levels ($L_{Ar, Tr}$) of 35 and 30 dB applied in low noise environments for day and night periods respectively. The SOAEL is defined at 10 dB above the typical background level

¹ Department for Environment Food and Rural Affairs (2010); Noise Policy Statement for England

($L_{A90,T}$) with minimum rating levels ($L_{Ar,Tr}$) of 45 and 40 dB applied in low noise environments for day and night periods respectively.

- 2.1.3 Planning Practice Guidance Noise² provides more information on the LOAEL and SOAEL by providing a noise exposure hierarchy table “*based on the likely average response of those affected*”. The hierarchy table identifies that, for noise levels between LOAEL and SOAEL, “*Noise can be heard and causes small changes in behaviour, attitude or other physiological response*”.
- 2.1.4 Noise levels at sensitive receptors in the ES are predicted at sensitive receptors as, at worst, above LOAEL but below SOAEL. For noise levels exceeding the LOAEL, the NPSE states that:
- “It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development.”*
- 2.1.5 The embedded in-built design measures represent reasonable steps to mitigate and minimise noise levels in accordance with planning policy. The general embedded in-built design measures incorporated within the Scheme are:
- Plant selection (noise emissions will be one of the criteria evaluated when procuring equipment for use on the site).
 - There is a commitment to locate Solar Stations (with inverters, transformers, and battery energy storage systems) at least 250m from residential properties. (Note, a greater offset distance has been proposed for East Cottage as a result of the modelling in this technical note, as described in Section 4 and 5).
 - Design layout to locate Scheme equipment in areas away from large concentrations of sensitive receptors such that noise emissions from electrical equipment are less impactful, including:
 - Location and orientation of the solar stations and BESS;
 - Location and orientation of inverters and transformers; and
 - Location and orientation of the two sub-stations.
- 2.1.6 There is a requirement to retain some flexibility on where infrastructure would be located within the Principal Site due to the outline nature of DCO applications but there are mechanisms that can establish design principles for the detailed design stage post consent should the DCO be approved. In this case, the Applicant commits that noise will be no higher than the predicted levels presented in the ES at sensitive receptors. This commitment is included in Table 3-8 of the Framework Operational Environmental Management Plan [EN010142/APP/7.9].

3. Baseline Noise Monitoring

3.1 Methodology

- 3.1.1 Baseline noise monitoring has been carried out to establish the existing noise climate in the area around the Principal Site. The baseline monitoring was used to define ambient noise conditions at sensitive receptors in the noise assessment presented in the PEIR³ for statutory consultation and in the ES submitted as part of the DCO application. The monitoring procedures followed guidance from BS 7445-1⁴ and BS 4142⁵. All noise measurements included $L_{Aeq,T}$ and $L_{A90,T}$ sound level indicators. Acoustic field calibrators were applied to each instrument at the start and end of each measurement. No significant drift (± 0.1 dB) in calibration was noted.

² Ministry of Housing, Communities & Local Government (2019); Planning Practice Guidance - Noise

³ British Standards Institute (2019) BS 4142:2014+A1:2019 – Methods for rating and assessing industrial and commercial sound. London: BSI.

⁴ British Standards Institute (2003) BS 7445 – Description and environment of environmental noise – Part 1: Guide to quantities and procedures. London: BSI.

⁵ British Standards Institute (2019) BS 4142:2014+A1:2019 – Methods for rating and assessing industrial and commercial sound. London: BSI.

- 3.1.2 Meteorological conditions were measured throughout the noise monitoring using a weather station. Noise measurements during adverse meteorological conditions (periods of high wind speed and rain) have been excluded from analysis. During the rest of the monitoring period wind speeds were below 5 m/s, which is conducive for noise monitoring.
- 3.1.3 Unattended long-term noise monitoring equipment was set up at four locations for a period of 7-days between the 8th July and 14th July 2022 and an additional four locations for a period of 7-days between the 15th July and 22nd July 2022. Continuous measurements were taken to establish the existing baseline conditions at nearby sensitive receptors. Each unattended sound level meter was housed in a weatherproof box with batteries to power the instrument for the full measurement duration. Appropriate outdoor all-weather equipment was used on all microphones.
- 3.1.4 Noise monitoring location ML7 provides representative ambient noise data for East Cottage and is located approximately 350 m east of the dwelling. It is common practice when monitoring noise to select a suitably representative proxy location for the purpose identifying (or providing worse case) ambient noise conditions at a sensitive receptor. As there were no identified dominant noise sources in the area, ambient noise is considered consistent at ML7 and East Cottage, and the noise data was considered suitably representative. The locations of ML7 and East Cottage are presented in Figure 3-1 below.

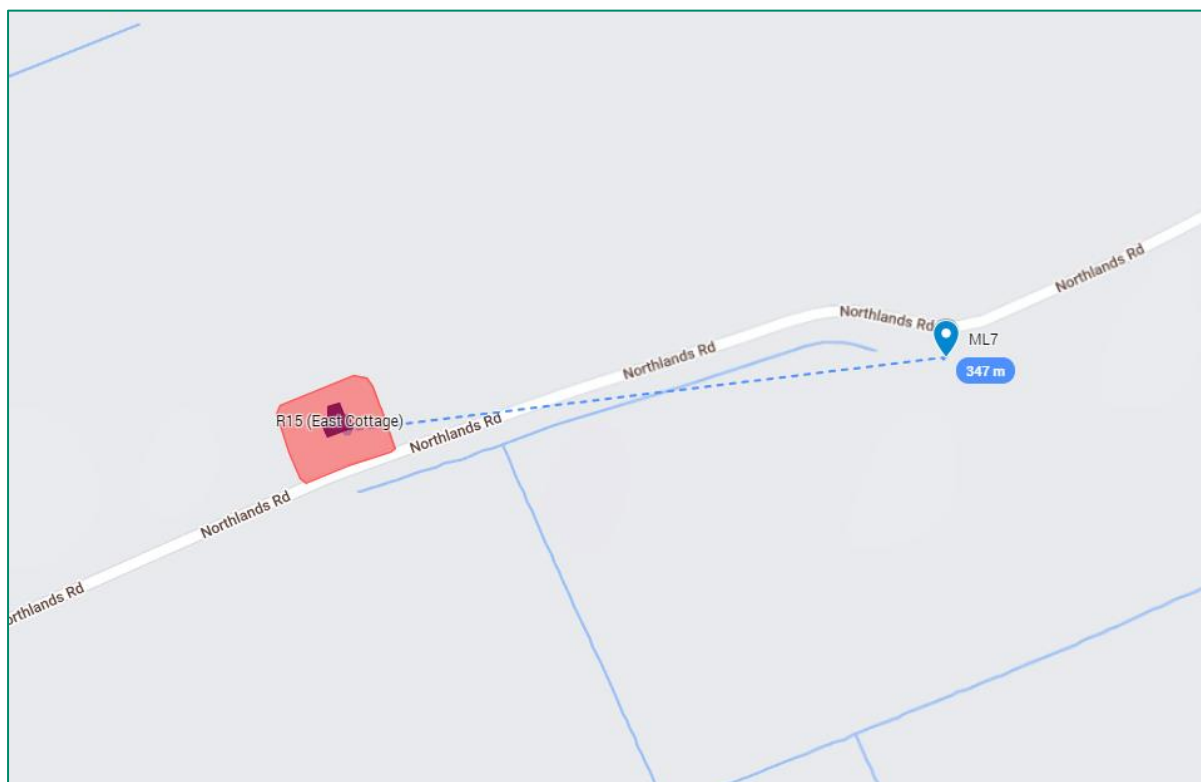


Figure 3-1 Noise Monitoring and Receptor Location

3.2 Results and Analysis

- 3.2.1 During the installation and collection of the noise monitoring equipment, the sound environment at this location was characterised by (from the most dominant noise source to the least dominant noise source):
- Intermittent traffic noise from Northlands Road;
 - Aircraft passing overhead;
 - Foliage moving in the wind;
 - Insects chirping; and
 - Birds calling.

- 3.2.2 A summary of the range of weekday and weekend measured sound levels during the daytime, evening and night-time periods is presented in Table 3-1 and Table 3-2. The values in Table 3-1 represent the range of ambient and background 1-hour levels measured during each time period over the week. The values in Table 3-2 represent the range of ambient and background levels, measured over the week, for the entire duration of the corresponding period. For the $L_{Aeq,T}$ values, this represents the ambient level for the corresponding time period and for the $L_{A90,T}$ values, this represents the arithmetic average of the one-hour L_{A90} values for the corresponding period.
- 3.2.3 The noise levels presented in Table A-1 to Table A-4 of Appendix A represent the arithmetic average of the one-hour ambient and background levels in each 1/3rd octave frequency band. Figure A-1 within Appendix A presents a time history of the measured levels throughout the survey period. Measured maximum and minimum background A-weighted 1/3rd octave sound data are presented in Figure D-1 for the weekday period and Figure D-2 for the weekend period within Appendix D.

Table 3-1. ML7 Baseline Noise Level 1-hour Summary

Location Reference	Week Period	Sound Level Indicator	Day (07:00 – 19:00)	Evening (19:00 – 23:00)	Night (23:00 – 07:00)
ML7	Weekday	$L_{Aeq, 1h}$	30-54	26-52	23-55
		$L_{A90, 1h}$	24-34	19-36	19-33
	Weekend	$L_{Aeq, 1h}$	30-60	27-37	23-42
		$L_{A90, 1h}$	25-32	22-29	20-33

Table 3-2. ML7 Baseline Noise Level Period Summary

Location Reference	Week Period	Sound Level Indicator	Day (07:00 – 19:00)	Evening (19:00 – 23:00)	Night (23:00 – 07:00)
ML7	Weekday	$L_{Aeq, T}$	40-48	33-46	32-46
		$L_{A90, T}$	27-33	25-28	23-28
	Weekend	$L_{Aeq, T}$	42-51	32-35	34-36
		$L_{A90, T}$	27-29	26	25-26

4. Operational Plant Noise Modelling

4.1 Noise Modelling

4.1.1 Noise predictions have been undertaken based on three illustrative site layouts:

- **Scenario 1:** Substation A located 510m away from East Cottage and the closest solar station and BESS in Field 92 within 250m of the cottage. This was considered as a worst-case scenario.
- **Scenario 2:** Substation A and the closest solar station and BESS approximately 510m and 550m from the nearest part of the East Cottage property boundary respectively.
- **Scenario 3a:** A revised masterplan layout, designed to reduce the noise at the cottage in response to concerns raised by the residents, with the solar station and BESS in Field 92 moved west to Field 88 (approximately 770 m from the nearest part of the property boundary with East Cottage) and the solar station and BESS in Field 93 moved west to the boundary of Field 77 (approximately 950 m from the nearest part of the property boundary with East Cottage). Substation A remains at approximately 510m from East Cottage. This illustrative masterplan layout has been included within the DCO submission (Figure 3-1: Illustrative Principal Site Layout Plan of the ES [EN010142/APP/6.3]).

- **Scenario 3b:** A revised masterplan layout with the same location for Substation A and the solar station and BESS in Field 92 moved to Field 88 as Scenario 3a, but with the solar station and BESS in Field 93 left in the same configuration as in Scenario 2, to test whether its relocation makes a difference to noise levels at East Cottage.
- 4.1.2 Operational noise was modelled in SoundPLAN which employs the noise prediction routines commonly used in the UK e.g. ISO 9613 Part 1⁶ and Part 2⁷, which applies “*moderate downwind conditions*” at receptor points when predicting noise, which may be considered a reasonable worst case.
- 4.1.3 Noise source data for plant has been selected based on experience of previous solar farms. There is a requirement for flexibility in final plant specifications so noise source data may not be representative of the plant selected in the final design. Although there can be variations in noise emissions from different makes of plant, there is a commitment in the Framework Operational Environmental Management Plan [EN010142/APP/7.9] to select plant with consideration of noise emissions where practicable. Additionally, the commitment to achieve noise levels predicted at sensitive receptors in line with the ES submitted as part of the DCO submission provides certainty on the maximum noise levels that will be experienced at sensitive receptors such as East Cottage.
- 4.1.4 The proposed inverters are represented by indicative sound source data based on measurements of Power Electronics central inverters at a similar existing facility, giving a total sound power of approximately 84 dB(A)⁸. Transformers associated with the inverters will have noise emissions approximately 10 dB(A) below that of the inverters. Noise from transformers will not be audible above noise from the inverters and have not been included in the modelling.
- 4.1.5 Battery storage module sound power levels have been based on AECOM library sound power data for battery storage module cooling systems, giving a sound power of 71 dB(A).
- 4.1.6 Sound level data of substation transformers have been modelled with a sound power level of 95 dB(A) and at a source height of 3.5 m.
- 4.1.7 Sound level data of shunt reactors in the substation area have been modelled with a sound power level of 82 dB(A) and at a source height of 4 m.
- 4.1.8 A worst-case assumption has been made that the inverters, BESS and substation are operational at all times, when in practice they would primarily operate during daylight hours. There may be energy stored in the BESS exported through the inverters and substation during night-time hours but this is unlikely to be full load and if it were, its operation would not be continuous. As there is uncertainty regarding when this would occur, a worst-case assumption has been assessed. However, in practice, noise from the inverters would likely be lower than predicted at night-time.
- 4.1.9 The BESS can be as noisy at night as in the day if there are high temperatures (e.g. above 25°C), due to the operation of fans to cool the system. This is likely to only be during the hottest days in the year and therefore an atypical occurrence. When the ambient temperatures are lower, the BESS will be operating at lower noise levels without a reliance on fans for cooling.
- 4.1.10 1/3rd octave band data for operational noise sources are presented in Appendix B.

4.2 Results

- 4.2.1 Although policy compliance has been demonstrated, this section provides more detailed analysis of the noise modelling results to contextualise how different noise sources influence the predicted noise levels at East Cottage. Three scenarios have been modelled to identify how different noise sources contribute to predicted noise levels at East Cottage as follows:
- All noise sources.
 - Substation noise only.

⁶ International Organisation for Standardisation (1993) ISO 9613 Attenuation of Sound during Propagation Outdoors – Part 1: Calculation of the Absorption of Sound by the Atmosphere. Switzerland: ISO.

⁷ International Organisation for Standardisation (1996) ISO 9613 Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation. Switzerland: ISO.

⁸ This is presented in the PEIR Appendix as 88dB so converted to A-weighting for consistency with other noise sources.

- Solar station (inverters and transformers) and BESS noise only.
- 4.2.2 The results of noise predictions at East Cottage, presented as specific noise levels, are summarised in Table 4-1. Full modelling results for Scenario 3a (i.e. the illustrative scheme included within the DCO application) are presented within the appendices of this technical note.

Table 4-1: Noise Modelling Results

Scenario	Predicted Specific Noise Level at East Cottage $L_{Aeq,T}$			
	Scenario 1 - Worst Case layout	Scenario 2- Initial Indicative layout	Scenario 3a – DCO Illustrative layout	Scenario 3b – Alternative DCO layout
All noise sources	29	28	26	27
Substation noise only	24	24	24	24
Solar station and BESS noise only	27	26	23	23

- 4.2.3 Table 4-1 shows that the predicted noise levels at East Cottage are progressively better for all the noise sources between Scenarios 1, 2 and 3, with Scenario 3a and 3b leading to the lowest noise levels. This change is due to the solar station and BESS locations on Field 92, with the noise from the substation at East Cottage consistent across the three modelled scenarios.
- 4.2.4 Predicted specific noise from the substation on its own is 24 dB for all scenarios, which is below average background sound levels, even at night.
- 4.2.5 It is the Applicant’s intention to progress with Scenario 3a, which reduces the noise impact at East Cottage by 3 dB for all noise sources relative to the worst-case scenario. The illustrative layout modelled as part of Scenario 3a is included within Figure 3-1: Illustrative Principal Site Layout Plan of the ES [EN010142/APP/6.3]. However, it is noted that the Works Plans [EN010142/APP/2.3] allow the location of solar station and BESS anywhere within Field 93, the worst-case scenario of which has been tested as part of Scenario 3b. This demonstrates that the location of solar station/ BESS on Field 93, only increases noise levels by 1 dB and therefore does not have a material difference to noise levels at East Cottage.
- 4.2.6 Table 4-2 presents a comparison of Scenarios 3a and 3b with all noise sources against the range of period baseline sound levels at East Cottage presented in Table 3-2. The predicted noise, external to cottage, from Scenarios 3a and 3b with all noise sources would not exceed 27 dB $L_{Aeq,T}$, which is below measured $L_{Aeq,T}$ ambient sound levels for all time periods (lowest of 32 dB $L_{Aeq,T}$ for weekend evening period) and equal to the lowest $L_{A90,T}$ for daytime periods of 27 dB. $L_{A90,T}$ background sound levels are exceeded during the evening and night-time periods for Scenarios 3a and 3b with all noise sources by up to 3-4 dB during the quietest period (a weekday night period with $L_{A90,T}$ of 23 dB).

Table 4-2: Comparison of Scenarios 3a and 3b for all noise sources against Baseline sound levels at East Cottage

Location Reference	Week Period	Sound Level Indicator	Day (07:00 – 19:00)	Evening (19:00 – 23:00)	Night (23:00 – 07:00)
ML7	Weekday	$L_{Aeq,T}$	Below ambient levels	Below ambient levels	Below ambient levels
		$L_{A90,T}$	Below background levels	1-2 dB above lowest background to 1-2 dB below highest background levels	3-4 dB above lowest background to 1-2 dB below highest background levels
	Weekend	$L_{Aeq,T}$	Below ambient levels	Below ambient levels	Below ambient levels
		$L_{A90,T}$	Below background levels	At or 1 dB above background levels	Up to 2 dB above background levels

- 4.2.7 1/3rd octave band results, with respect to Scenario 3a are tabulated in Appendix B and noise contour plots for this scenario are presented in Appendix E. 1/3rd octave band noise predictions at East Cottage show a prominent peak at 100 Hz from the substation and at less prominent peaks centred around 1,600Hz from the substation and at 400 Hz and 1,000 Hz due to inverter noise.
- 4.2.8 As can be seen from Figure E-2, the noise contours from the substation are not symmetrical in all directions. This is a result of the ground topography in which ground height increases to the east of the substation with some undulating ground and decreases to the west. This results in more ground absorption and therefore lower sound levels to the east.
- 4.2.9 A comparison of 1/3rd octave band predictions at East Cottage for all noise sources with the maximum and minimum measured background $L_{A90,1h}$ period 1/3rd octave band data are presented in Figure D-1 for the weekday period and Figure D-2 for the weekend period.
- 4.2.10 The figures show that 1/3rd octave band levels predicted at East Cottage from solar farm infrastructure are typical of background 1/3rd octave band levels for day, evening and night periods with the exception of 100 Hz substation noise, which is above the measured 100 Hz background sound level at all times.
- 4.2.11 A discussion as to what this may mean for the residents of East Cottage, in terms of the potential audibility of the solar farm infrastructure, is provided in Section 6.

5. Mitigation

- 5.1.1 The DCO application incorporates the following general mitigation measures to minimise operational noise:
- a. Table 3-8 of the Framework Operational Environmental Management Plan (OEMP) **[EN010142/APP/7.9]** includes the below measures to minimise operational noise. In accordance with Requirement 13 of the draft DCO **[EN010142/APP/3.1]**, a detailed operational management plan will be prepared prior to operation; this must be substantially in accordance with the Framework OEMP.
 - i. The specification of plant machinery with low noise emission and properly attenuated supply and extract terminations will help to minimise noise emissions during the operational phase. The use of enclosures, local screening, mufflers, and silencers will also be used as appropriate. If required, the relevant penalty/ correction would be applied in accordance with British Standard 4142.
 - ii. The location and orientation of Solar Stations and substations, inverters, transformers and cooling fans are in areas away from large concentrations of receptors such that operational noise emissions from electrical equipment are less impactful. There is a commitment to locate Solar and BESS Stations at least 250 m from residential properties.
 - iii. Transformers may be standalone units or pre-assembled with inverters and switchgear to form a single contained unit (i.e. they are enclosed).
 - iv. The Applicant commits that noise at sensitive receptors will be no higher than the levels presented in Section 13.8 of Chapter 13: Noise and Vibration of the ES **[EN010142/APP/6.1]**.
 - b. The Outline Design Principles Statement **[EN010142/APP/7.4]** states that '*to avoid adverse noise effects on residential properties in close proximity to the Scheme, solar stations and BESS will not be located within 250m of a residential property*'.
 - c. The Works Plans **[EN010142/APP/2.3]** submitted with the DCO application exclude the provision of solar station and BESS on Field 92 to further reduce noise impacts on East Cottage.
 - d. Finally, the following requirement is included within Schedule 2 of the draft DCO **[EN010142/APP/3.1]**:

Operational noise

17.—(1) No part of Work No. 1, Work No. 2 or Work No. 3 may commence until an operational noise assessment containing details of how the design of the authorised development has incorporated mitigation to ensure the operational noise rating levels as set out in the environmental statement are to

be complied with for that part has been submitted to and approved by the relevant planning authority for that part.

(2) The mitigation measures described in the operational noise assessment for each part of the authorised development must be implemented as approved.

- 5.1.2 Acoustic barriers were considered as part of the mitigation strategy through noise model testing to determine their effectiveness at mitigating substation noise. From the modelling results it was found that the noise barriers had minimal impact on reducing the emitted noise levels of the substation at East Cottage. Therefore, noise barriers have been deemed an ineffective mitigation measure.

6. Conclusions

- 6.1.1 Noise modelling of solar farm infrastructure has been undertaken to provide details on how noise would influence occupants of East Cottage, Northlands Road. The noise model results have been compared with measured noise data that is considered representative of typical noise conditions at the East Cottage.
- 6.1.2 Four layouts have been modelled ranging from the worst to best layout in terms of noise at East Cottage. The noise model results indicate that, for all layouts, predicted specific noise levels at East Cottage from solar farm infrastructure are low, with no significant effects arising. As such, the Scheme is policy compliant in terms of the likely average response of those affected.
- 6.1.3 Overall noise levels from the Scheme submitted with the DCO application are typical of background sound levels at East Cottage. With reference to Figure A-1 and Table 4-1, in the worst-case scenario of continuous operation of solar infrastructure overnight (see para. 4.1.8), such noise is expected to be higher than (external) background sound between approximately 22:30 and 04:30 and lower than background throughout the rest of the day. Existing ambient sound levels are typically well above the levels expected from solar infrastructure noise, except in the middle of the night when they are comparable. During the day existing ambient sound is typically 10-20 dB higher, with intermittent maximum sound levels higher still.
- 6.1.4 In relation to the overall broadband noise level, and noting that residents are likely to be indoors during the night period where even a partially open window could provide up to 15 dB further attenuation⁹, solar farm infrastructure noise is unlikely to be louder than the existing background sound.
- 6.1.5 The noise from the transformers in the sub-station is tonal, with a relative peak at 100 Hz, which, although expected to be at a low level (14 dB) at East Cottage, is louder than the background sound during daytime and night-time at this frequency. This tone could therefore be audible outside East Cottage. However, there are existing ambient sounds above 14 dB at 100 Hz throughout the day, and although it is unlikely they exhibit the same tonal nature as that of the transformers it is possible that they would help mask the sound of the transformer.
- 6.1.6 The Applicant is carrying out a review of the sound power levels associated with the transformers of the substation. It is likely that the modelling has over-estimated the noise impacts by applying deliberately high sound power levels and assuming this level of noise is emitted at all times of the day, evening and night.
- 6.1.7 The Applicant will be procuring this equipment during detailed design stage, post consent. At the detailed design stage, the Applicant's noise consultant will advise on the adequacy of the equipment and remodel the sound power levels to deliver a Scheme that adheres with the draft DCO Requirement 17.

⁹ British Standards Institute (2014) BS 8233:2014 – Guidance on sound insulation and noise reduction for buildings. London: BSI.

Appendix A 1/3-Octave Band Sound Measurements

Table A-1: Measured Weekday Ambient (L_{Aeq}) Average 1/3-octave Band Data

Period	Measured 1/3-Octave A-weighted Ambient (L _{Aeq}) Noise																											
	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz
Day	3	9	14	16	19	21	23	24	25	26	29	38	40	32	30	30	29	28	26	25	23	24	26	23	19	15	12	10
Evening	3	7	8	13	15	16	18	20	23	23	25	28	29	28	28	28	27	25	24	23	22	24	24	22	18	13	10	7
Night	0	1	5	8	12	13	17	19	19	20	23	27	29	23	21	21	20	18	18	17	19	23	24	23	18	11	9	7

Table A-2: Measured Weekend Ambient (L_{Aeq}) Average 1/3-octave Band Data

Period	Measured 1/3-Octave A-weighted Ambient (L _{Aeq}) Noise																											
	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz
Day	0	4	9	12	15	19	19	21	24	25	26	32	34	30	29	29	28	27	27	26	27	31	32	27	21	13	10	8
Evening	0	2	6	9	11	13	14	15	16	17	19	22	26	23	21	22	21	21	21	18	17	22	22	17	14	10	8	6
Night	0	1	5	7	10	10	12	13	14	16	18	22	25	21	21	21	20	19	21	21	23	27	28	24	16	10	8	5

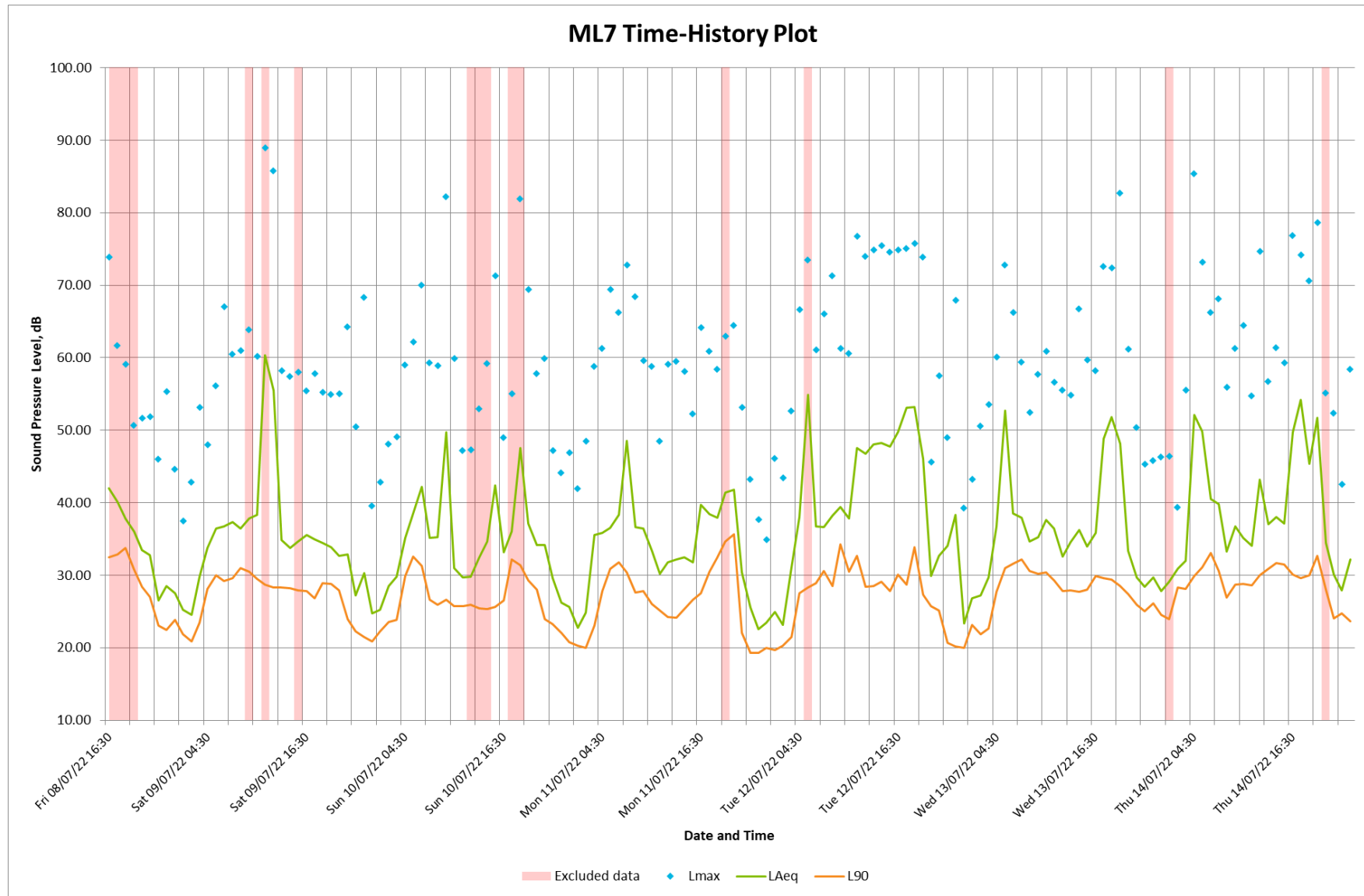
Table A-3: Measured Weekday Background (L_{A90}) Average 1/3-octave Band Data

Period	Measured 1/3-Octave A-weighted Ambient (L _{A90}) Noise																											
	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz
Day	0	0	2	4	5	6	6	7	9	11	14	16	18	18	19	19	17	16	14	13	12	12	12	11	10	9	8	6
Evening	0	0	0	1	3	4	6	5	7	9	12	14	16	15	15	15	13	12	11	10	10	10	11	11	10	9	7	6
Night	0	0	0	0	4	5	6	5	6	8	11	13	14	13	14	13	11	10	9	8	9	9	9	10	9	8	7	5

Table A-4: Measured Weekend Background (L_{A90}) Average 1/3-octave Band Data

Period	Measured 1/3-Octave A-weighted Ambient (L _{A90}) Noise																											
	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz
Day	0	0	0	2	5	5	6	6	8	9	12	14	15	15	17	17	16	14	12	12	12	12	11	11	10	9	8	6
Evening	0	0	1	3	5	6	5	4	6	7	9	14	16	15	15	15	13	12	10	9	9	10	10	10	9	9	7	5
Night	0	0	0	1	4	4	5	5	6	9	11	14	15	14	14	13	11	10	9	8	9	10	10	9	9	8	7	5

Figure A-1 ML7 time history plot



Appendix B 1/3-Octave Band Noise Source Data and Results for Scenario 3a

Table B-1: 1/3-octave Band Noise Source Data

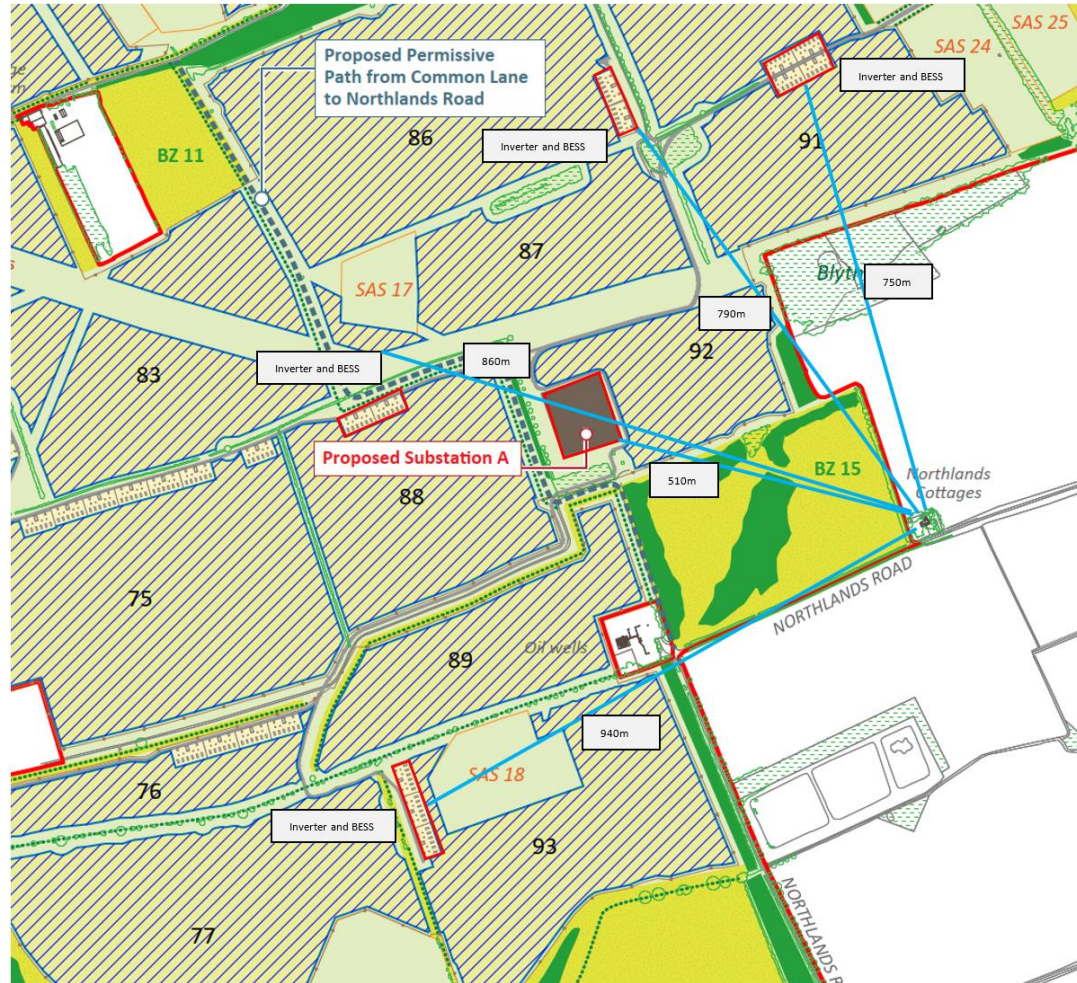
Plant	A-weighted Sound Power Data dB																												
	Sum	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz
BESS*	71	18	24	32	31	34	41	56	44	51	53	58	62	59	60	66	70	61	64	66	65	66	64	62	59	59	54	47	41
Inverter Fan Vent	84	25	32	44	41	43	47	59	49	56	61	73	78	67	69	73	77	68	70	73	73	72	71	66	64	64	60	51	44
Shunt Reactor	82	35	42	48	47	49	69	56	49	59	59	65	64	61	68	73	71	71	76	70	72	68	72	61	53	49	47	44	36
Transformer	95	48	55	61	60	62	82	69	62	72	72	78	77	74	81	86	84	84	89	83	85	81	85	74	66	62	60	57	49

*BESS sound power data was normalised to 71.0dB(A)

Table B-2: Predicted 1/3-octave Band Noise Specific Noise Levels at East Cottage

Scenario	Predicted A-weighted Specific Noise Level at East Cottage																												
	Sum	31 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz
All Source	26	0	0	0	0	1	14	6	0	5	7	15	18	9	12	18	19	14	19	14	11	3	0	0	0	0	0	0	0
Substation Only	24	0	0	0	0	0	14	0	0	4	4	9	8	5	11	17	15	15	19	11	11	2	0	0	0	0	0	0	0
Inverters, BESS and Tracking Motors Only	23	0	0	0	0	0	0	4	0	0	4	13	17	6	8	13	17	6	8	11	4	0	0	0	0	0	0	0	0

Appendix C Illustrative Site Layout with Distance to Nearest Noise Generating Plant for Scenario 3a



Appendix D 1/3-Octave Band Measured and Predicted Noise Levels for Scenario 3a

Figure D-1 Weekday maximum and minimum measured $L_{A90,1h}$ 1/3-octave Band Noise Levels (A-weighted) and Predicted Noise

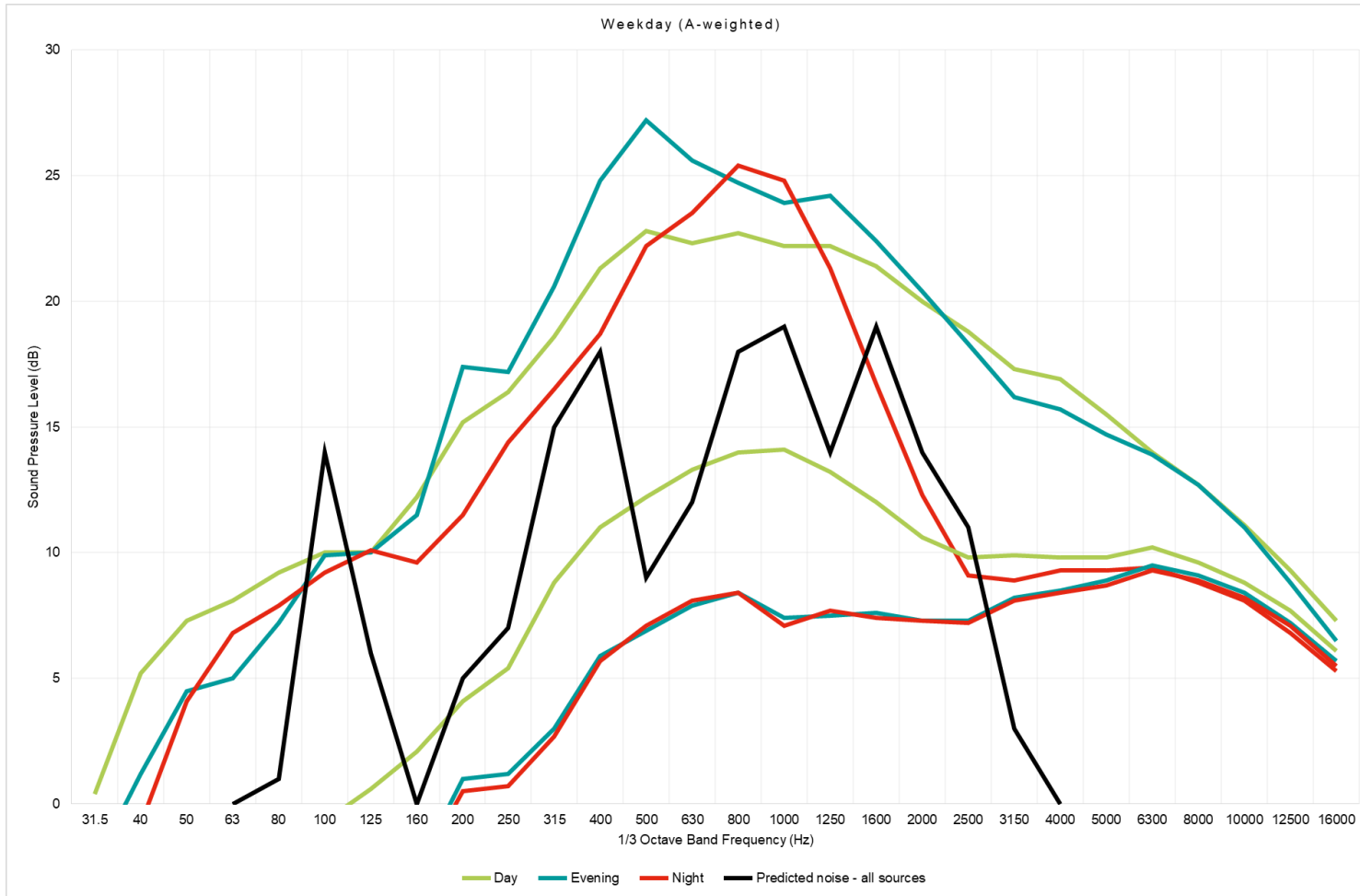
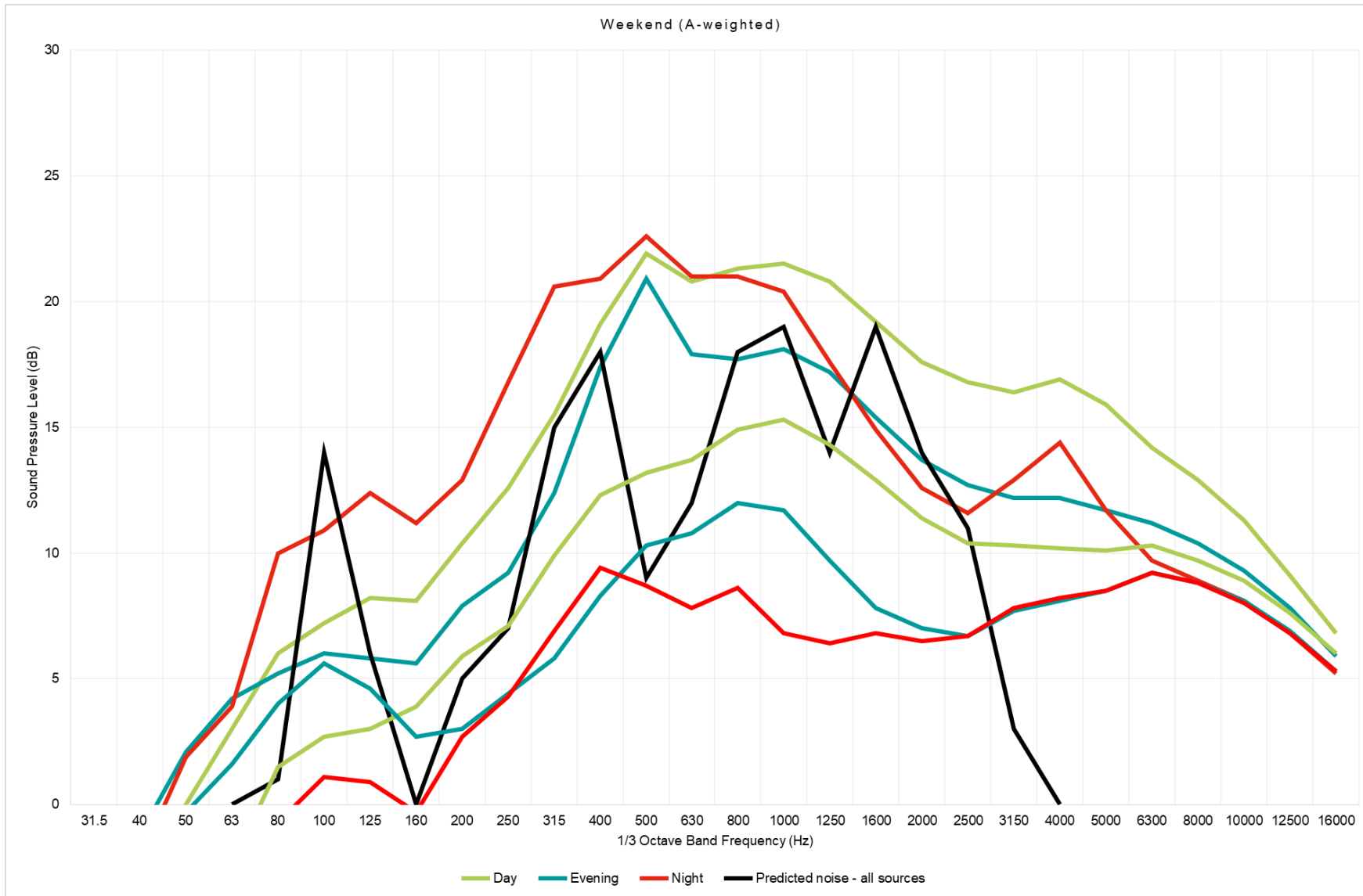


Figure D-2 Weekend maximum and minimum measured $L_{A90,1h}$ 1/3-octave Band Noise Levels (A-weighted) and Predicted Noise



Appendix E Noise Contour Plots for Scenario 3a

Figure E-1: All Noise Sources

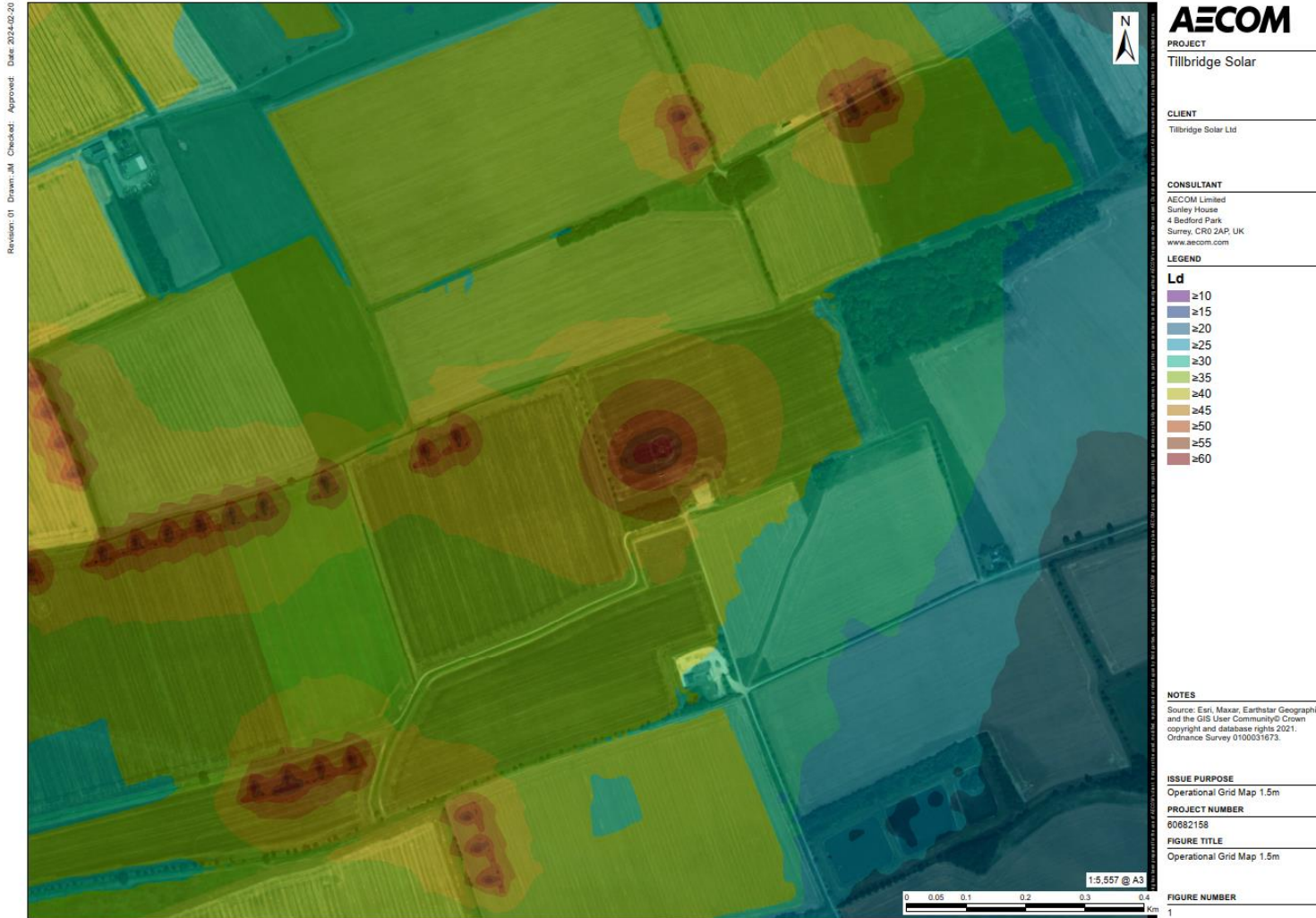


Figure E-2: Substation Noise Only

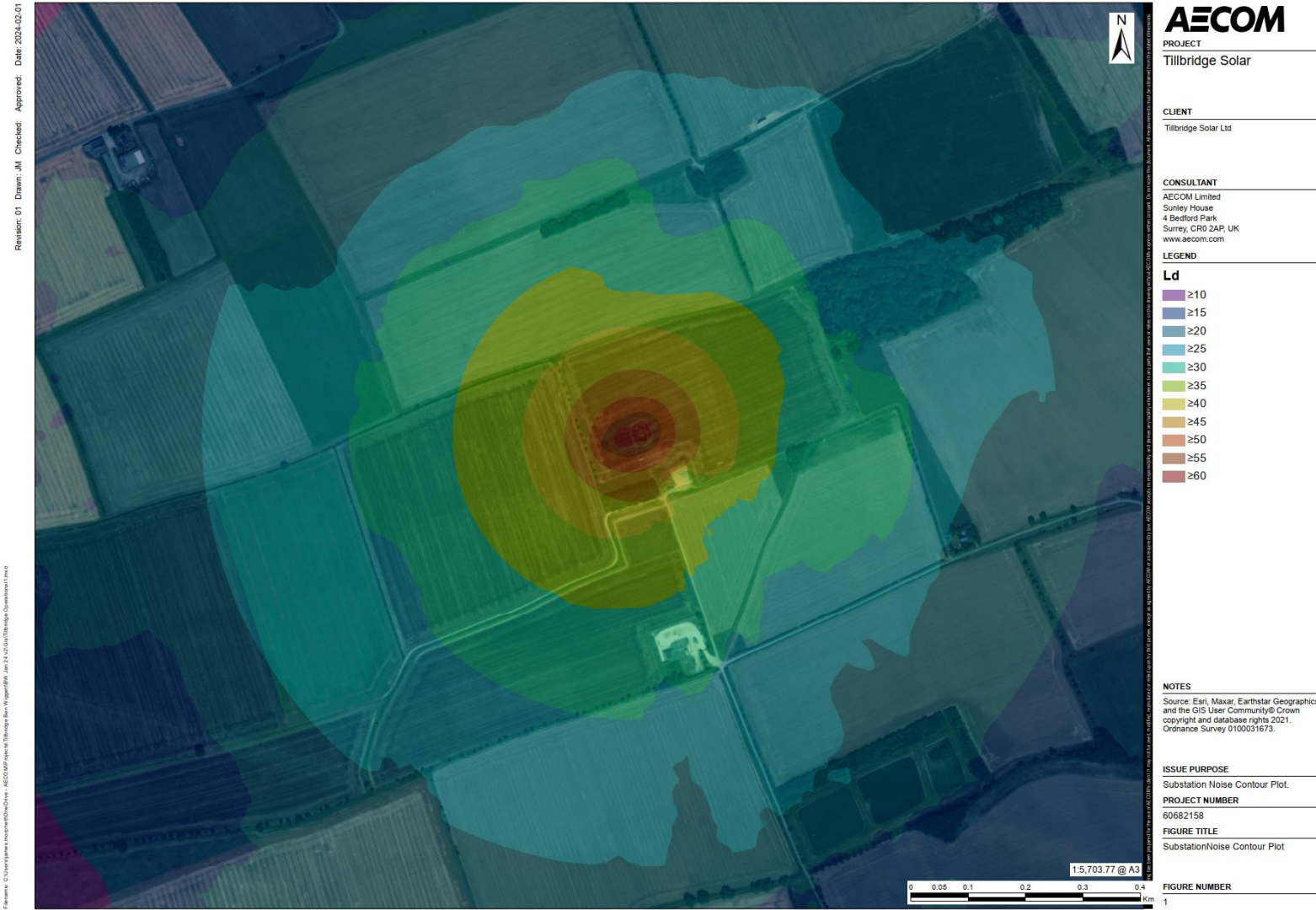
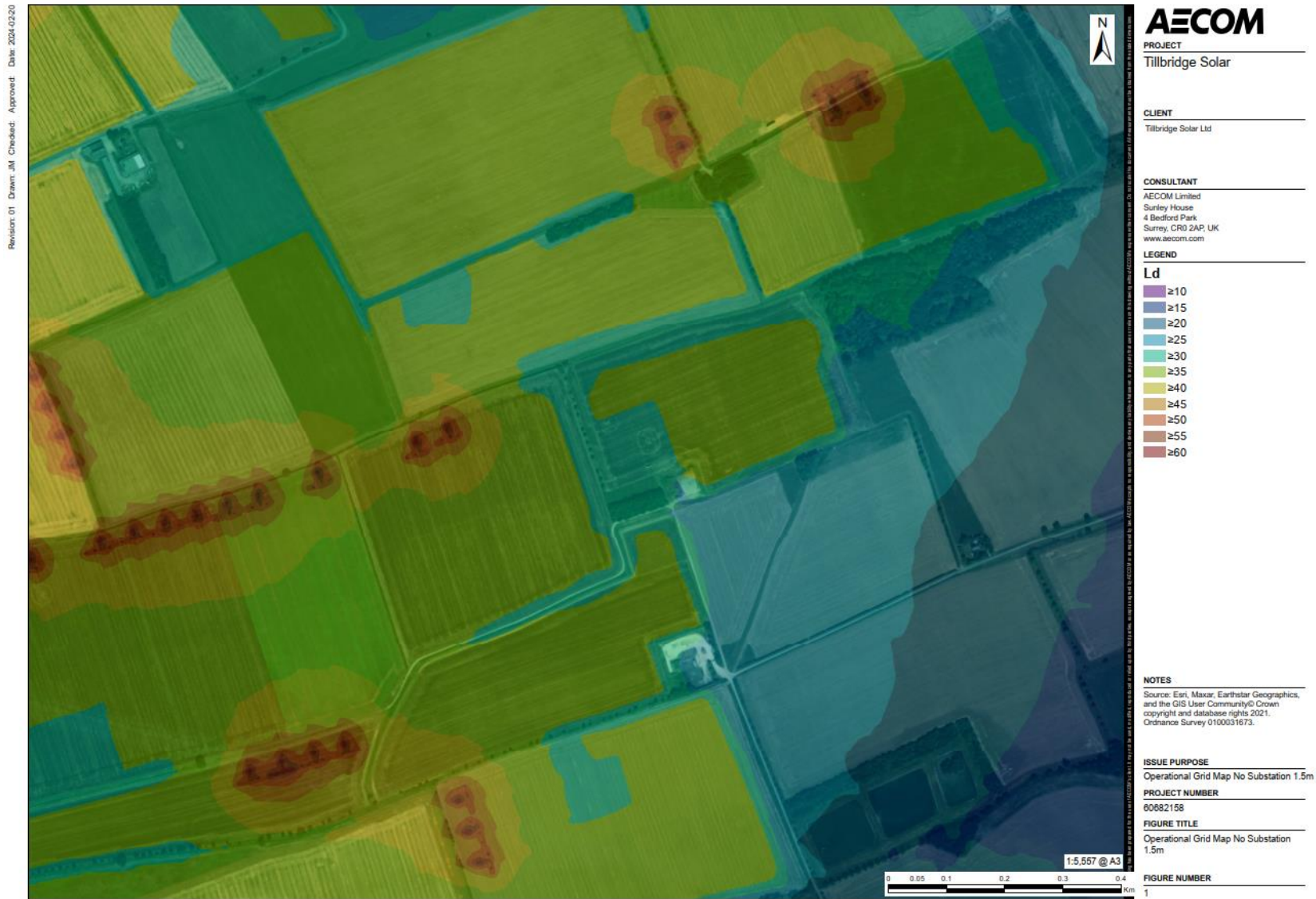


Figure E-3: Inverter and BESS Noise Only



Appendix D Report on the DCO Process



Tillbridge Solar Project

Report on the Development Consent Order Process

July 2024

tillbridgesolar.com

@: info@tillbridgesolar.com T: 0800 046 9643

Table of Contents

1.	Introduction	2
1.1	Purpose	2
1.2	The Scheme	2
1.3	Abbreviations and Glossary	3
1.4	The DCO Process.....	6
1.5	The Draft DCO	7
2.	The Application	7
2.1	Summary	7
2.2	Volume 2 – Plans/Drawings/Sections	8
2.3	Volume 3 – Draft Development Consent Order.....	10
2.4	Volume 6 – Environmental Impact Assessment	12
2.5	Volume 7 – Other Documents.....	12
2.6	Statement of Common Ground	16
3.	Conclusion.....	17

Plates

Plate 1. Extract from Works Plans (Sheet 07 of 24) showing restrictions to the Scheme adjoining East Cottage, Northlands Road	10
-------------------------------------------------------------------------------------------------------------------------------------	----

Tables

Table 1. Abbreviations	3
------------------------------	---

1. Introduction

1.1 Purpose

- 1.1.1 Tillbridge Solar Limited ('the Applicant') submitted an application on the 10 April 2024 for a Development Consent Order (DCO) ('the Order') for the Tillbridge Solar Project ('the Scheme').
- 1.1.2 This report seeks to support and assist discussions with a stakeholder who occupies a property close to the Scheme (East Cottage) to explain how if the Order is granted for development consent what mitigation and control measures would be secured to ensure that the Scheme does not result in significant effects with respect to noise.
- 1.1.3 This report seeks to build upon the context already provided and set out in the technical note on noise produced and issued by AECOM to the stakeholder on 13 May 2024.

1.2 The Scheme

- 1.2.1 The Scheme will comprise the construction, operation (including maintenance), and decommissioning of ground-mounted solar photovoltaic (PV) arrays. The Scheme will also include associated development to support the solar PV arrays.
- 1.2.2 The Scheme is made up of the Principal Site, the Cable Route Corridor and works to the existing National Grid Cottam Substation. The Principal Site comprises the solar PV arrays, electrical substations, grid balancing infrastructure, cabling and areas for landscaping and ecological enhancement.
- 1.2.3 The associated development element of the Scheme includes but is not limited to access provision; a Battery Energy Storage System (BESS), to support the operation of the ground mounted solar PV arrays; the development of on-site substations; underground cabling between the different areas of solar PV arrays; and areas of landscaping and biodiversity enhancement.
- 1.2.4 The Scheme also includes a 400kV underground Cable Route Corridor of approximately 18.5km in length connecting the Principal Site to the national electricity transmission network at the existing National Grid Cottam Substation.
- 1.2.5 The Scheme will export and import electricity to the National Electricity Transmission System (NETS).

1.3 Abbreviations and Glossary

1.3.1 There are a number of abbreviations and technical terms used in this report relating to the application and DCO process. To assist, below is a table setting out a definition of each abbreviated term along with its meaning. It is hoped that this will assist in providing a greater understanding of the DCO process and the technical aspects of the Scheme.

Table 1. Abbreviations

Abbreviation/Term	Definition	Meaning
DCO	Development Consent Order	Development consent is required pursuant to the Planning Act 2008 for Nationally Significant Infrastructure Projects. A development consent order is the order which grants development consent when an application is made to the Secretary of State.
ES	Environmental Statement	A document produced in accordance with the Environmental Impact Assessment (EIA) Directive as transposed into UK law by the EIA Regulations to report the results of an EIA.
BESS	Battery Energy Storage System	Batteries with associated infrastructure to store, import and export electricity to the National Grid. The batteries are lithium iron phosphate batteries with a liquid cooling or Heating, Ventilation and Cooling (HVAC) system housed within a container. Associated infrastructure includes the DC / DC (Direct Current) converter and Transformers, Inverter and Switchgear, which are shared with Solar Stations. The DC/DC converter will be installed alongside every BESS battery container to keep cabling as short as possible and losses low.
NETS	National Energy Transmission Network	The definition of the National Grid Network.
ODP	Outline Design Principles	The ODP sets out the guiding principles to form the basis of the detailed design of the Scheme. The principles set out in the ODP are secured through a requirement (condition) of the DCO. This requires that the detailed design when submitted for

approval, must be in accordance with the design principles set out in the ODP.

FCEMP	Framework Construction Environmental Management Plan	This plan provides a framework for environmental management during the construction phase of the Scheme, with the aim to provide a clear and consistent approach to environmental mitigation during construction.
FOEMP	Framework Operational Environmental Management Plan	This plan provides a framework for how the operational mitigation measures included within the ES will be implemented and sets out the monitoring and auditing activities designed to ensure that such mitigation measures are carried out, and that they are effective
FDEMP	Framework Decommissioning Environmental Management Plan	This plan provides a framework for how the mitigation measures included within the ES will be implemented during the decommissioning stage. It also sets out the monitoring and auditing activities designed to ensure that such mitigation measures are carried out, and that they are effective.
FCTMP	Framework Construction Traffic Management Plan	This plan provides a framework for traffic management practices for construction traffic and staff vehicles during the construction of the Scheme.
FLEMP	Framework Landscape and Ecology Management Plan	This plan provides a framework for achieving the outline design, including the successful establishment and future management of biodiversity and landscaping works.
RR	Relevant Representation	This is a summary of a person's view on the DCO application that is made in writing during the relevant representation period. In the case of the Tillbridge Solar Project, the relevant representation period runs between the 13 June and 1 August 2024.
IP	Interested Party	Through submitting a written relevant representation, this means that the party writing the response has the status of an Interested Party that is able to participate in the Examination.
	Rule 6 letter	This is the letter inviting all Interested Parties to the Preliminary Meeting. The letter will also include a draft Examination Timetable.

ExA	Examining Authority	The Examining Authority is the Inspector or a Panel of Inspectors appointed to conduct the Examination of the application.
OFH	Open Floor Hearing	This can be requested by an Interested Party or if the ExA considers it necessary. They provide the forum for individuals and community groups to speak directly to the ExA. They are open for general discussion rather than being related to a specific topic.
CAH	Compulsory Acquisition Hearing	The CAH explores the issues relating to compulsory acquisition matters and relates to if a Scheme includes powers that allow the applicant to compulsorily acquire land and interests in land that are needed for the development to go ahead. This hearing can be requested by an "Affected Person," this being a person who possesses rights or interests over the land that is proposed to be compulsorily acquired. However, the intention of projects is to seek the voluntary acquisition of land in the first instance.
ISH	Issue Specific Hearing	ISH are held to discuss specific issues arising from the application. It often focuses on key environmental matters. The topics to be discussed will be set out by the ExA prior to the commencement of the Examination.
	Examination	This is the formal process in which the DCO application is scrutinised by the ExA. The Examination commences after the Preliminary Meeting has been closed and can last up to six months.
	Examination Library	This is a list of documents that form a record of the evidence, including the application documents, submitted to the Examination of an application.
	Preliminary Meeting	This is a procedural meeting held after the deadline for making Relevant Representations and for the ExA to make an initial assessment of the Principal Issues after considering the application documents. All Interested Parties will be invited to attend the Preliminary Meeting.

SoCG	Statement of Common Ground	An SoCG is a statement prepared by the Applicant and Interested Parties to set out those issues agreed, in negotiation and not agreed. These are prepared before the Examination commences and evolve during the process to reach a final position that is then signed and agreed to by both parties. The SoCG supports the ExA in the running of the Examination to focus on potential issues that may remain in dispute. All parties are encouraged to work proactively on SoCGs to narrow areas of disagreement.
------	-------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

1.4 The DCO Process

- 1.4.1 The application was accepted for Examination on the 8 May 2024 by the Planning Inspectorate. The Applicant has publicised the acceptance of the application as prescribed by law and regulations for a six-week period beginning on the 13 June 2024 and running until the 1 August 2024. During this period, the public is able to make a written representation to the Planning Inspectorate setting out its views on the application. This is termed as the Relevant Representation ('RR') period. Through submitting a RR, the public is then able to participate in the examination process and is referred to as an Interested Party (IP).
- 1.4.2 The Scheme is currently in its pre-examination phase. This is the period before the formal Examination commences. There is no defined period for the time associated with this phase. It can be between three and six months from the acceptance of the application by the Planning Inspectorate.
- 1.4.3 The Planning Inspectorate confirmed in a letter to the Applicant on the 19 June 2024 that the Examining Authority ('the ExA') has been appointed to examine the application. The ExA will comprise a panel of two members (Nicolas Ely as Lead Member of the ExA and Luke Simpton as a member of the Examining Authority).
- 1.4.4 Following the close of the RR period, the ExA will consider the written responses received to inform the proposed timetable for the Examination and to set out an initial assessment of the key issues. A letter (Rule 6) will be issued by the ExA setting out these matters with the preliminary meeting then following this. The preliminary meeting is where the ExA will explain to the participants how they intend to run and manage the Examination. Following the close of the preliminary meeting, the Examination period formally commences.
- 1.4.5 The Examination must be completed in six months and is predominantly conducted through the ExA asking written questions and seeking written responses. The responses have to be submitted in accordance with deadlines set out on the published timetable, which will be formalised following the close of the preliminary meeting.

- 1.4.6 Hearings are also held throughout the Examination whereby verbal evidence can be given. There are different types of hearings including Open Floor Hearings ('OFH'), Compulsory Acquisition Hearings ('CAH') and Issue Specific Hearings (ISHs). The OFH provides an opportunity for an IP to make oral rather than written representations. The CAH provides an opportunity for those parties who may be affected by land rights being sought by the Scheme do discuss this with the ExA. ISHs can relate to matters where the ExA wishes to seek clarification on written information already submitted and is often the forum in which discussion takes place on environmental matters. For example, this can include issues such as landscape, public rights of way, drainage and flood risk.

1.5 The Draft DCO

- 1.5.1 The DCO is a legal document, known as a statutory instrument, which if development consent is granted, would authorise the construction, operation and maintenance of the Scheme.
- 1.5.2 The DCO will contain other powers in addition to permission for the Scheme including consent to alter existing accesses, improve existing roads and temporarily restrict the use of public rights of way. The DCO will include powers to compulsory acquire land should this be required or to secure the temporary acquisition of land to facilitate construction. In addition, the DCO will include powers to undertake works to trees and hedgerows and include deemed consent to allow the cable between the Principal Site and National Grid Cottam Substation to be laid under the River Trent. This is not an exhaustive list of all powers sought by the DCO.

2. The Application

2.1 Summary

- 2.1.1 The application contains many documents that are presented in seven volumes. The volumes are as follows:
- a. Volume 1. Application Form
 - b. Volume 2. Plans/Drawings/Sections
 - c. Volume 3. Draft Development Consent Order and related documents
 - d. Volume 4. Compulsory Acquisition information
 - e. Volume 5. Consultation Report
 - f. Volume 6. Environmental Statement
 - g. Volume 7. Other documents
- 2.1.2 This reports cross references a number of documents that form part of the application for the Tillbridge Solar Project. Each document contains a unique reference number. The reference number will help the reader to locate the

source document should it seek to review this alongside this report. This reference number is split into three components. The start of the reference number uses the unique project reference number that has been provided to the Applicant by the Planning Inspectorate (EN010142), the second part refers to application (APP) and the third element refers to the location of the document within the application. The first number refers to the volume in which the document is located (1 to 7) and the second number is the number of the document within the Volume. For example, the draft DCO is reference number **[EN010142/APP/3.1]**.

- 2.1.3 The documents can be found using the document library on the Planning Inspectorate’s website via the link provided below:

<https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN010142/documents>

- 2.1.4 The documents contained within each of the volumes have different functions. In terms of those documents, which relate to the control and mitigation of the development, this relates to:

- a. Volume 2. Plans/Drawings/Sections
- b. Volume 3. Draft Development Consent Order and related documents
- c. Volume 6. Environmental Statement
- d. Volume 7. Other documents

- 2.1.5 Following the acceptance of the Application for Examination, the Examination library hosted on the Planning Inspectorate’s website has given each document a unique reference beginning with ‘APP.’ For example, the draft DCO is also known as APP-014.

<https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010142/EN010142-000427-Tillbridge%20Solar%20Examination%20Library.pdf>

2.2 Volume 2 – Plans/Drawings/Sections

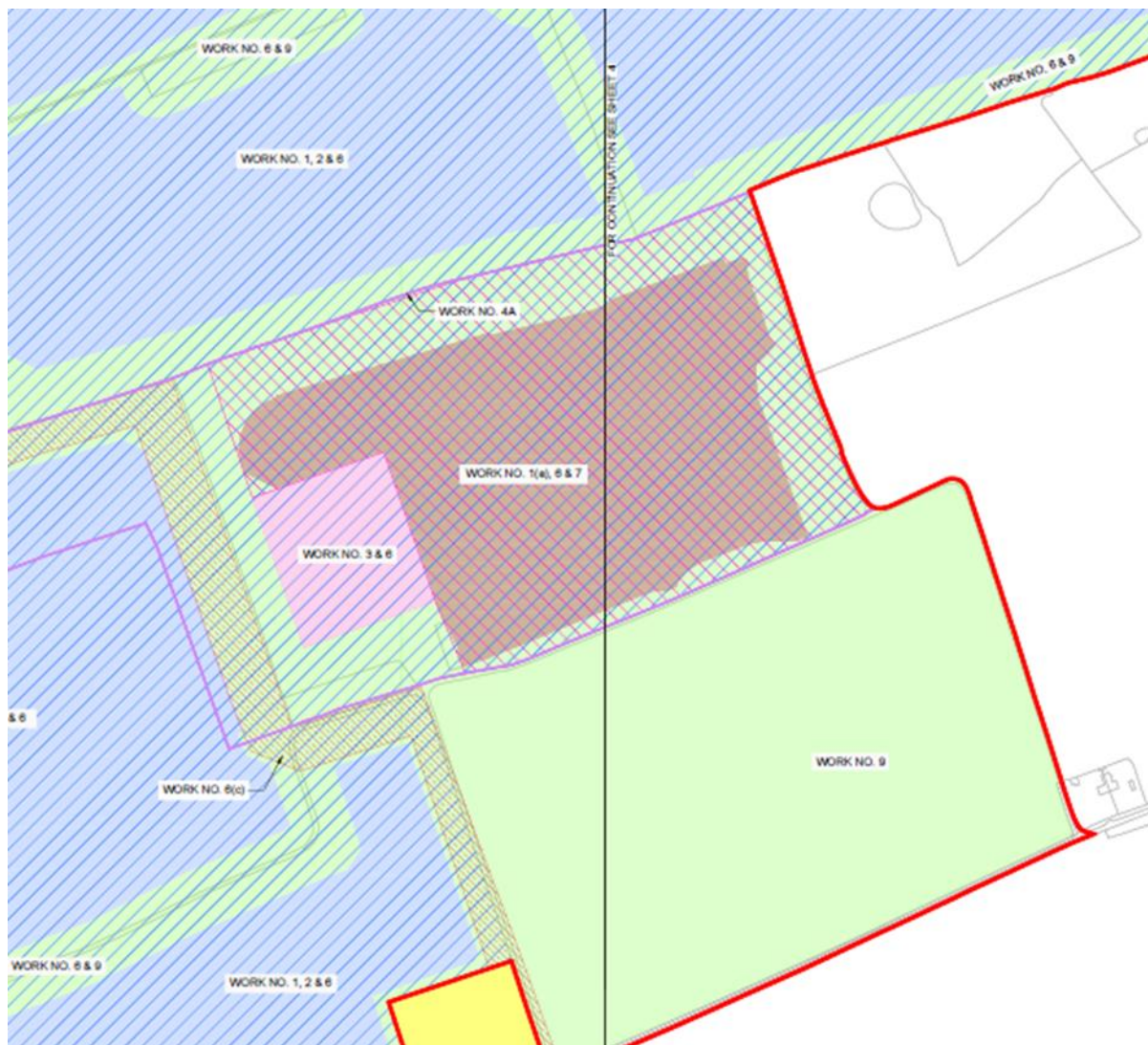
- 2.2.1 Work Plans form part of the Volume 2 documents. The Work Plans establish a set of parameters in which the detailed design will need to adhere to. The DCO, if granted will only approve the principle of the development. Further approvals will be required post decision of the DCO that relates to the detailed design of the Scheme.

- 2.2.2 The Work Plans seek to provide flexibility for the location of some elements of the Scheme but to fix other elements.

- 2.2.3 In the case of the location of solar panels (Work No. 1 (a), Solar Stations (Work No. 1 (b) and BESS (Work No. 2) there are measures built into the Work Plans to restrict some elements in response to feedback following the close of statutory consultation in July 2023 and to include landscaping/ecological enhancement areas.

- 2.2.4 The Work Plans, as submitted would secure the provision of landscape and biodiversity enhancement measures adjoining East Cottage on Northlands Cottage to the west. The area would measure approximately 12.5ha (437m x 287m).
- 2.2.5 Located immediately to the north of the area of landscape and biodiversity enhancement is an area of land where the authorised development would be restricted. In this location, the Work Plans would only permit the construction, operation and maintenance of solar panels, electrical cables (and those other ancillary elements listed under Work No. 6 within the draft Order), temporary construction compounds; a substation and associated landscaping and ecological enhancement areas. The Work Plans would preclude the construction, operation and maintenance of Solar Stations and BESS within this location. Plate 1 below includes an extract from Sheet 07 of 24 of the **Work Plans [EN010142/APP/2.3] & [APP-007]** to enable this restriction to be understood. It also shows the area of landscape and ecological enhancement that will have to be provided to the south of the solar PV shown in green and labelled Work No. 9.

Plate 1. Extract from Works Plans (Sheet 07 of 24) showing restrictions to the Scheme adjoining East Cottage, Northlands Road



2.2.6 The Work Plans will be what is termed as an Approved Document. This means that the detailed Scheme will need to be in accordance with the parameters set out on the Work Plans. This will include the prohibition of BESS and Solar Stations in the area shown above and the inclusion of the area of landscaping and ecological enhancement on the land also shown above.

2.3 Volume 3 – Draft Development Consent Order

2.3.1 The draft DCO will comprise the statutory instrument that authorises the proposed construction, operation and maintenance of the Scheme. The draft DCO contains a number of Schedules. The Schedules clarify what the Scheme is and the provisions and powers associated with the Order.

2.3.2 Schedule 1 of the draft DCO describes the Scheme and the development that would be approved should the DCO be granted. This is done through referring to the different components of the Scheme as Work numbers. By

way of example, Work No. 1 (a) refers to the ground mounted solar photovoltaic panels, Work No. 1 (b) relates to Solar Stations, Work No. 2 relates to battery energy storage systems (BESS) and Work No. 3 relates to onsite substations. Work No. 9 relates to areas of habitat management and protection, Work No. 6 relates to electrical cables connecting the solar panels to the BESS and Work No. 7 relates to temporary construction compounds.

- 2.3.3 Solar Stations sit alongside the solar panels to convert the low voltage electricity generated by the solar panels to medium voltage electricity to transfer the electricity to the onsite substations. The infrastructure within the Solar Stations includes inverters, transformers and switchgear.
- 2.3.4 The BESS provides equipment that can store energy when it is generated and not demanded supporting the balancing of the grid and efficiency of the Scheme.
- 2.3.5 The Scheme is DC-coupled. This means that both the Solar Stations and BESS are dispersed across the Principal Site.
- 2.3.6 The Scheme includes two onsite substations located within the Principal Site. The substations will export the electricity generated by the solar panels to the National Grid via a high voltage underground cable (400kV) connecting the Principal Site to the National Grid network at the National Grid Cottam Substation.
- 2.3.7 Schedule 2 of the draft DCO sets out proposed requirements. These are more commonly known as conditions in relation to planning permission. They have multiple functions including:
- a. Ensuring that the authorised development is commenced within a certain period, in this case five years following the date in which the Order comes into force,
 - b. Further details to be submitted for approval prior to the commencement of the construction of the Scheme,
 - c. The timing of certain works in relation to the overall construction programme, and
 - d. A time-limit placed on the operation of the Scheme (60-years).
- 2.3.8 The Scheme cannot be built until the details are submitted for approval in accordance with the requirements. Following approval of the details submitted to discharge the requirements, the Scheme must be built in accordance with the approved details.
- 2.3.9 Requirement 5 of the draft DCO relates to detailed design approval. This confirms that the solar panels, Solar Stations, BESS, sub-stations or cable connecting the Principal Site with the National Grid Cottam Substation cannot commence until approval has been given of the detailed design of the Scheme.
- 2.3.10 The details will also have to ensure that the detailed design will not give rise to new or materially different environmental effects from those assessed in

the ES **[EN01042/APP/6.1]** & **[APP-031 to APP-050]**. The mitigation measures secured through the requirements to the **draft DCO [EN010142/APP/3.1]** & **[APP-014]** will ensure that this takes place.

2.3.11 Requirement 17 of Schedule 2 of the **draft DCO [EN010142/APP/3.1]** & **[APP-014]** relates to operational noise. This states that:

- a. No part of Work No. 1, Work No. 2 or Work No. 3 may commence until an operational noise assessment containing details of how the design of the authorised development has incorporated mitigation to ensure the operational noise rating levels as set out in the environmental statement are to be complied with for that part has been submitted to and approved by the relevant planning authority for that part.
- b. The mitigation measures described in the operational noise assessment for each part of the authorised development must be implemented as approved.

2.3.12 This requirement means that the Scheme once operational will not be permitted to generate any more noise than what is contained within the ES.

2.4 Volume 6 – Environmental Impact Assessment

2.4.1 The Scheme is subject to Environmental Impact Assessment with the application supported by an Environmental Statement (ES) **[EN010142/APP/6.1]** & **[APP-031 to APP-050]**. The ES considers the environmental effects of the Scheme during construction, operation and decommissioning. It identifies where the scheme will have significant effects and seeks to reduce these effects through the design process or other mitigation measures.

2.4.2 The ES sets out where significant effects remain following the inclusion of mitigation measures to be incorporated within the Scheme. In terms of noise, the ES confirms that no significant effects will arise during construction, operation or the decommissioning of the Scheme upon East Cottage, Northlands Road.

2.5 Volume 7 – Other Documents

2.5.1 The **Outline Design Principles Statement (ODP) [EN010142/APP/7.4]** & **[APP-213]** sets out the guiding principles for the detailed design of the Scheme to be secured by Schedule 2, requirement 5 (detailed design approval) of the **draft DCO [EN010142/APP/3.1]** & **[APP-014]**. When the detailed design for the Scheme is submitted for approval to the relevant planning authority, those details must be in accordance with the design principles set out in the ODP Statement.

2.5.2 In addition to the restriction to the Scheme secured by the **Work Plans [EN010142/APP/2.3]** & **[APP-007]** described in section 2.3, the **ODP [EN010142/APP/7.4]** & **[APP-213]** also requires that at the detailed design stage that Solar Stations and BESS are not located within 250m of a residential property. However, it should be noted that in terms of East

Cottage, Northlands Road, that this distance is significantly increased due to the restrictions on the location of BESS and Solar Stations provided for in the **Work Plans [EN010142/APP/2.3] & [APP-007]** as described in section 1.7 of this report.

- 2.5.3 The application submission for the Tillbridge Solar Project is supported by a number of Framework Management Plans. Some of these include further measures to control noise that could occur through the construction, operation and decommissioning of the Scheme. This includes:
- a. Framework Construction Environmental Management Plan (FCEMP) **[EN010142/APP/7.8] & [APP-219]**
 - b. Framework Operation Environmental Management Plan (FOEMP) **[EN010142/APP/7.9] & [APP-220]**
 - c. Framework Decommissioning Environmental Management Plan (FDEMP) **[EN010142/APP/7.10] & [APP-221]**
 - d. Framework Construction Traffic Management Plan (FCTMP) **[EN010142/APP/7.11] & [APP-222]**
 - e. Framework Landscape Environmental Management Plan (FLEMP) **[EN010142/APP/7.17] & [APP-229 to APP-231]**
- 2.5.4 The framework plans set out the parameters for detailed management plans. Requirements forming part of the draft DCO, require that the detailed management plans need to be in accordance with the framework plans. The framework plans and the associated requirements set out within the **draft DCO [EN01042/APP/3.1] & [APP-014]** will ensure that measures are secured as part of the detailed design to provide additional mitigation and control measures as part of the Scheme.
- 2.5.5 There are various measures within the framework plans that will further protect the residential amenity of the occupiers of those residing at East Cottage, Northlands Road with respect to noise. This is set out in more detail below.
- 2.5.6 In terms of construction, this relates to mitigation measures included within the **FCEMP [EN010142/APP/APP/7.8] & [APP-219]** and **FCTMP [EN010142/APP/7.11] & [APP-222]** Mitigation incorporated into the construction of the Scheme will include:
- a. Ensuring that all appropriate processes, procedures and measures are in place to minimise noise before works begin and throughout the construction programme.
 - b. All Principal Contractors to be made familiar with current legislation and the guidance in BS 5228 (Parts 1 and 2) (or relevant guidance at the time) which should form a prerequisite of their appointment.
 - c. Where reasonably practicable, noise and vibration are controlled at source (e.g. the selection of inherently quiet plant and low vibration equipment), review of the decommissioning programme and

methodology to consider quieter methods, consideration of the location of equipment on-site and control of working hours.

- d. Use of modern plant, complying with applicable UK noise emission requirements.
- e. Hydraulic techniques for breaking concrete or rocks to be used in preference to percussive techniques, where reasonably practicable.
- f. Drop heights of materials will be minimised.
- g. Plant and vehicles will be sequentially started up rather than all together. controlling noise at source, the minimising of noise through the use of best practice to be deployed by contractors.
- h. Off-site pre-fabrication where reasonably practicable.
- i. Use of screening locally around significant noise producing plant and activities.
- j. Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturer's specifications.
- k. All construction plant and equipment to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use.
- l. Loading and unloading of vehicles, dismantling of site equipment or moving equipment or materials around the Order limits to be conducted in such a manner as to minimise noise generation, as far as reasonably practicable.
- m. All vehicles used on-site shall incorporate reversing warning devices as opposed to the typical tonal reversing alarms to minimise noise disturbance where reasonably practicable.
- n. Provision of information to the relevant local authority and local residents to advise of potential noisy works that are due to take place.
- o. Unnecessary revving of engines will be avoided, and equipment will be switched off when not in use.
- p. Plant will always be used in accordance with manufacturers' instructions. Care will be taken to site equipment away from noise-sensitive areas. Where practicable, loading and unloading will also be carried out away from such areas.

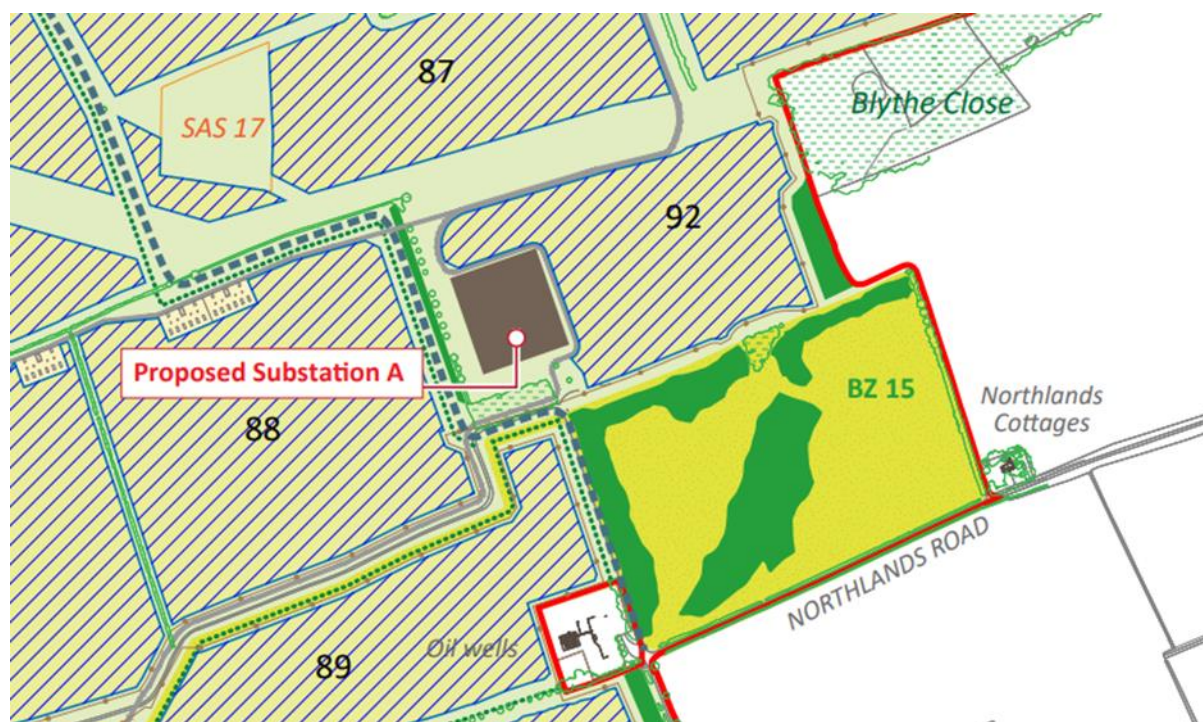
2.5.7 The **FCEMP [EN010142/APP/7.8] & [APP-219]** also sets out a proposed restriction on working hours on-site to further ensure that noise impacts are minimised. Working hours are proposed to run from 0700 to 1900 (with working days comprising one 12-hour shift) on Monday to Friday and 0700 to 1300 on Saturday (with working days comprising one 6-hour shift).

2.5.8 The **FCTMP [EN010142/APP/7.11] & [APP-223]** includes measures to manage construction traffic during the construction of the Scheme. This includes the management of traffic during construction including routing. A routing plan is included in Figures 1 and 2 in Appendix B of the FCTMP

identifying the key routes that will be used by vehicles to travel to/from the Principal Site and Cable Route Corridor. This confirms that in relation to the Principal Site, all heavy and abnormal loads will avoid local towns and villages with no access during construction being available along Northlands Road.

- 2.5.9 With respect to operation, the Table 3-8 of the **FOEMP [EN010142/APP/7.9] & [APP-220]** includes a number of measures to minimise operational noise:
- a. The specification of plant machinery to have low noise emissions and be properly attenuated to minimise noise emissions during the operational phase. The use of enclosures, local screening, mufflers, and silencers will also be used as appropriate.
 - b. The location and orientation of Solar Stations and substations, inverters, transformers and cooling fans are in areas away from large concentrations of receptors such that operational noise emissions from electrical equipment are less impactful. There is a commitment to locate Solar and BESS Stations at least 250 m from residential properties secured by the ODP.
 - c. Transformers may be standalone units or pre-assembled with inverters and switchgear to form a single contained unit (i.e. they are enclosed).
 - d. The Applicant commits that noise at sensitive receptors will be no higher than the levels presented in Section 13.8 of **Chapter 13: Noise and Vibration** of the ES **[EN010142/APP/6.1] & [APP-044]**.
- 2.5.10 In accordance with Requirement 13 of the **draft DCO [EN010142/APP/3.1] & [APP-014]**, a detailed operational management plan will be prepared and approved prior to operation. This will need to be substantially in accordance with the **FOEMP [EN010142/APP/7.9] & [APP-220]** and to include those protection measures described above.
- 2.5.11 The **FLEMP [EN010142/APP/7.17] & [APP-229 to APP-231]** sets out the framework to ensure that the detailed design secures the outline design parameters presented in **Figure 3-1 Indicative Principal Site Layout Plan** of the ES **[EN010142/APP/6.3] & [APP-128]**. This includes the commitment to deliver, establish and manage the biodiversity and landscape works shown in **Figure 3-1 Indicative Principal Site Layout Plan** of the ES **[EN010142/APP/6.3] & [APP-128]**. This includes areas of tree and woodland planting and the inclusion of Biodiversity Zones to provide new habitats for ecological and green infrastructure enhancement. This will ensure the provision of an area of proposed woodland planting and biodiversity enhancement in the field located to the north-west of East Cottage. This will ensure that separation is provided between the dwelling and solar PV panels. **Plate 2** below shows an extract of **Figure 3-1 Indicative Principal Site Layout Plan** of the ES **[EN010142/APP/6.3] & [APP-128]** in relation to East Cottage:

Plate 2. Extract of Figure 3-1 Indicative Principal Site Layout Plan of the ES [EN010142/APP/6.3]



2.5.12 Decommissioning activities will also be subject to the controls included in the Framework Decommissioning Environmental Management Plan (DEMP) [EN010142/APP/7.10] & [APP-221]. This will be secured by requirement 20 of the draft DCO [EN010142/APP/3.1] & [APP-014], which sets out when the DEMP must be submitted to and approved by the relevant planning authority and confirms that it must be substantially in accordance with the Framework DEMP [EN010142/APP/7.10] & [APP-221]. The DEMP will include measures to ensure that noise is controlled through a restriction on working hours and other mitigation measures to ensure the protection of residential amenity. The mitigation measures align with those set out in the FCEMP.

2.6 Statement of Common Ground

2.6.1 Parties involved in the DCO process are encouraged to prepare a document called a Statement of Common Ground (SoCG). This provides a written document containing factual information for the ExA to clearly understand those matters agreed, those matters subject to on-going negotiation and those matters which are not agreed between the Applicant and Interested Parties. The SoCG will support the ExA in asking further written questions on key matters during the Examination process and for the ExA to decide whether oral discussions are required on a matter. Should this be required, this will be as part of a hearing, known as an Issue Specific Hearing.

2.6.2 The Applicant and key parties are encouraged to prepare SoCGs in the pre-Examination stage of the process so that the Examination can focus on issues requiring further clarification or that remain outstanding.

- 2.6.3 The ExA will issue a letter, known as a Rule 6 letter, prior to the first meeting that will take place (preliminary meeting), ahead of the Examination formally starting. The ExA will formally set out in the Rule 6 letter SoCGs that it expects the Applicant to complete.
- 2.6.4 The Applicant would like to prepare an SoCG with Alison Wood and Nick Mapstone as a means of providing clarity for the ExA on engagement that has taken place and to confirm the position of both Parties.

3. Conclusion

- 3.1.1 This report has explained the form and content of the application for development consent for the construction, operation and maintenance of the Tillbridge Solar Project. It has then set out how if the DCO is granted for the Scheme what restrictions and mitigation will be put in place associated with the development. This report has focused on measures relating to noise.
- 3.1.2 It has been explained that there are a number of different mechanisms to do this through the following:
- i. The authorised development being restricted by the parameters set out in the **Works Plans [EN010142/APP/2.3] & [APP-007]**.
 - ii. The Scheme being restricted by measures set out in the **Outline Design Principles Statement (ODP) [EN010142/APP/7.4] & [APP-213]**.
 - iii. Requirements forming part of the DCO Order which will mean that the detailed design will need to be in accordance with the principles established by the ODP and the framework management plans referred to in Section 2.0.
 - iv. The DCO will contain a specific requirement on noise preventing the commencement of development of the solar PV, BESS and sub-stations until it is confirmed that the operational noise rating levels set out in the environmental statement are complied with. The requirement will also mean that the mitigation approved will need to be implemented in accordance with the details submitted for approval with respect to the noise requirement.
 - v. The detailed design will also need to be in accordance with the **Framework Landscape Environmental Management Plan [EN010142/APP/7.17] & [APP-229 to APP-231]** and the parameters set out by **Figure 3-1 Indicative Principal Site Layout Plan** of the ES **[EN010142/APP/6.3] & [APP-128]** to secure landscape and biodiversity enhancements and mitigation. This will ensure that the landscape buffers shown on **Figure 3-1 Indicative Principal Site Layout Plan** of the ES **[EN010142/APP/6.3] & [APP-128]** between East Cottage and the proposed PV panels is delivered.

- 3.1.3 The Applicant is also willing to enter into a Statement of Common Ground to support continued engagement.

Appendix E UK Food Security Report from DEFRA (2021)



Department
for Environment
Food & Rural Affairs

UK Food Security Report 2021

Presented to Parliament pursuant to Section 19 of the Agriculture Act
2020

Ordered by the House of Commons to be printed on 16 December 2021

We are the Department for Environment, Food and Rural Affairs. We're responsible for improving and protecting the environment, growing the green economy, sustaining thriving rural communities and supporting our world-class food, farming and fishing industries.

We work closely with our 33 agencies and arm's length bodies on our ambition to make our air purer, our water cleaner, our land greener and our food more sustainable. Our mission is to restore and enhance the environment for the next generation, and to leave the environment in a better state than we found it.



© Crown copyright 2021

This information is licensed under the Open Government Licence v3.0. To view this licence, visit www.nationalarchives.gov.uk/doc/open-government-licence/

This publication is available at <https://www.gov.uk/government/collections/united-kingdom-food-security-report>

Any enquiries regarding this publication should be sent to us at

foodsecurityreport@defra.gov.uk

www.gov.uk/defra

ISBN 978-1-5286-3111-2

E02702656 12/21

Printed on paper containing 75% recycled fibre content minimum

Printed in the UK by HH Associates Ltd. on behalf of the Controller of Her Majesty's Stationery Office

Contents

Introduction.....	6
Theme 1 Global Food Availability.....	11
Indicator 1.1.1 Global output per capita.....	16
Indicator 1.1.2 Cereal yield growth rates by region	20
Case Study 1.1 Plant diseases and pests	24
Indicator 1.1.3 Real agricultural commodity prices	26
Indicator 1.1.4 Stock to consumption ratios.....	31
Indicator 1.1.5 Global livestock and dairy production	34
Case Study 1.2 African Swine Fever.....	43
Indicator 1.1.6 Global fish stocks.....	45
Indicator 1.1.7 Global land use change	51
Indicator 1.1.8 Phosphate rock reserves	57
Indicator 1.1.9 Water withdrawn for agriculture	61
Indicator 1.2.1 Global agricultural labour force capacity	66
Indicator 1.2.2 Components of global food demand growth	70
Indicator 1.2.3 Share of global production internationally traded.....	74
Indicator 1.2.4 Concentration in world agricultural commodity markets.....	77
Theme 2 UK Food Supply Sources	82
Indicator 2.1.1 UK Production Capability	86
Indicator 2.1.2 Current land area in production	88
Indicator 2.1.3 UK food imports and exports	90
Indicator 2.1.4 EU share of UK imports	93
Indicator 2.1.5 Overall diversity of supply	95
Indicator 2.1.6 Domestic grain production	96
Indicator 2.1.7 Livestock.....	99
Indicator 2.1.8 Other domestic crops.....	103
Indicator 2.1.9 Supply sources of UK fresh fruit and vegetable imports	110
Indicator 2.1.10 Seasonality	112
Indicator 2.1.11 Fish.....	115
Indicator 2.2.1 Essential inputs.....	119
Indicator 2.2.2 Agriculture and supply chain waste	125
Indicator 2.2.3 Household food waste	128
Indicator 2.3.1 Sustainable agriculture	130
Indicator 2.3.2 UK soil health.....	134
Indicator 2.3.3 Climate change impacts on yields	135
Case Study 2.1 Climate change: farming impacts and risks.....	138
Indicator 2.3.5 Environmental impacts of agriculture.....	142
Theme 3 Food Supply Chain Resilience	149

Indicator 3.1.1 Business resilience and response	154
Case Study 3.1 COVID-19 response	156
Indicator 3.1.2 Energy dependency in the food sector	159
Case Study 3.2 9 August 2019 Power Outage: Food Sector Impact	164
Indicator 3.1.3 Transport dependency in the UK.....	166
Indicator 3.1.4 Points of entry in the UK.....	171
Indicator 3.1.5 Food imports via Short Strait.....	175
Indicator 3.1.6 Border closures	178
Case Study 3.3 French Border Closure, December 2020	179
Case Study 3.4 UK-Imposed Border Closures (southern Africa; South America), January 2021	180
Indicator 3.1.7 Key inputs to the food supply chain.....	181
Case Study 3.5 Carbon Dioxide (CO2) Shortage 2018	185
Indicator 3.1.8 Consumer behaviour	186
Context and rationale.....	187
Case Study 3.6 Consumer behaviour in the 2020 lockdown.....	189
Indicator 3.1.9 Labour and skills dependency	193
Indicator 3.2.1 Cyber threat in the food supply chain	198
Case Study 3.7 Cyber threat to USA meat company	200
Indicator 3.2.2 Diversity of food retailers.....	202
Indicator 3.2.3 Economic resilience in the food supply chain.....	204
Case Study 3.8 COVID-19 impacts upon the Wholesale sector	205
Discussion	205
Theme 4 Food Security at Household Level	207
Indicator 4.1.1 Food expenditure growth compared to other household spending growth	210
Indicator 4.1.2 Low-income households' share of spending on food	213
Indicator 4.1.3 Price changes of main food groups	219
Indicator 4.1.4 Household food security.....	222
Indicator 4.1.5 Access to food shops in England	228
Indicator 4.2.1 Eligibility for Free School Meals	232
Indicator 4.2.2 Take-up of Healthy Start voucher scheme	236
Case study 4.1 Food Aid	239
Case Study 4.2 Public Sector Food Procurement in England.....	242
Theme 5 Food Safety & Consumer Confidence	245
Indicator 5.1.1 Consumer confidence in the food system and its regulation	250
Indicator 5.1.2 Consumer concerns	256
Case Study 5.1 Allergen information on Food Pre-packed for Direct Sale	260
Case Study 5.2 Codex.....	261
Indicator 5.1.3 Food business compliance with food safety regulation	262
Data and assessment	263

Indicator 5.1.4 Food safety incidents, alerts and recalls	267
Case Study 5.3 Product recalls instigated by malicious tampering with retail consumer products	275
Indicator 5.1.5 Prevalence of foodborne pathogens	278
Indicator 5.1.6 Foodborne disease outbreak surveillance	284
Case Study 5.4 <i>Listeria</i> outbreak linked to consumption of pre-prepared hospital sandwiches in England.....	293
Indicator 5.1.7 Food Crime	295
Case Study 5.5 Unlawful processing in the red meat sector	298
Case Study 5.6 Operation OPSON and the Food Industry Intelligence Network	300
Case Study 5.7 Activities of the Food Authenticity Network and Centres of Expertise	302
About the UK Food Security Report	306
Appendix	309

Introduction

Executive summary

This report is an analysis of statistical data on food security in the United Kingdom. It is the first in a series of reports which will be published under a new duty in the Agriculture Act 2020 to report to Parliament on food security in the United Kingdom at least once every three years.

The UK Food Security Report (UKFSR) examines past, current, and predicted trends relevant to food security, to present the best available and impartial analysis of food security in the UK, and to lay the groundwork for future Food Security Reports.

Food security is a complex and multi-faceted issue. To address the subject's many diverse aspects, the UKFSR is structured around five principal 'themes', each addressing an important component of modern-day food security in the UK. They are as follows: **global food availability**, which describes supply and demand issues, trends and risk on a global scale, and how they may affect UK food supply; **UK food supply**, which looks at the UK's main sources of food at home and overseas; **supply chain resilience**, which outlines the physical, economic, and human infrastructure that underlies the food supply chain, and that chain's vulnerabilities; **household-level food security**, which deals with issues of affordability and access to food; and **food safety and consumer confidence**, which details food crime and safety issues.

The report draws on a broad range of published statistical data from government and other sources. These quantitative sources are supplemented with case studies and qualitative analysis where necessary and helpful. In some cases, where quantitative evidence is not available due to data being limited or confidential, or where the report references recent events which are not yet reflected in published statistics, only qualitative analysis is available.

Context

As set out under Section 19 of the Agriculture Act 2020: *"The Secretary of State must, on or before the relevant day and at least once every three years thereafter, prepare and lay before Parliament a report containing an analysis of statistical data relating to food security in the United Kingdom."*

The UKFSR is the first comprehensive review of the UK's food security to be published since the UK Food Security Assessment (UKFSA), which was first

published in 2009 and updated in 2010. In the decade since the UKFSA, the food security landscape has changed significantly. The UK's departure from the European Union has brought along changes in areas as diverse as trade, farming, and access to fisheries, representing both challenges and opportunities in food security. Climate change and its impacts on farming and the food supply chain are now also better understood. The COVID-19 pandemic and other concurrent events happening towards the end of 2020, such as the UK leaving the EU and increased food demand due to Christmas, have stress-tested the supply chain, highlighting both the vulnerabilities in this complex system and the resilience and flexibility of the UK's food supply. In addition, the pandemic has increased public awareness in a range of food security areas. This includes the complexities and dependencies of the UK's food supply chain, notably the advantages and risks of just-in-time food supplies, as well as the issues surrounding household food insecurity as households struggled to afford food.

While the UKFSR is a different document to the UKFSA, it has some important similarities. It shares a number of common data sources and covers a similar spread of topics in its five themes as the UKFSA did in its six.

The production of this report is the responsibility of the Department for Environment, Food and Rural Affairs (Defra). It has been produced in collaboration with relevant officials in the Devolved Administrations, and with UK food safety bodies. An area as all-encompassing as food security touches on a wide range of government bodies. Agricultural and food supply policy is devolved to each national administration. National Security and Counter Terrorism (CT) policy is a specific reservation under the Home Affairs heading. As lead departments for food as a Critical National Infrastructure (CNI) sector, Defra and the FSA manage those risks specifically relating to National Security and CT across the UK. For all other areas of risk, food supply chain resilience and security are the responsibility of Defra in England; DAERA and Department for Communities in Northern Ireland; Scottish Government in Scotland; and Welsh Government in Wales. The FSA is responsible for food safety and tackling food crime in England, Northern Ireland, and Wales. Food Standards Scotland are responsible for food safety and food crime in Scotland.

What is food security?

Food security has many dimensions. As a topic, it encompasses the state of global agriculture and markets on which the UK is reliant; the sources of raw materials and foodstuffs in the UK and abroad; the manufacturing, wholesale, and retail industries that ultimately bring food to shelves and plates, and their complex supply chains of inputs and logistics; and the systems of inspection that allow consumers to be confident their food is safe, authentic, and of a high standard.

Accordingly, this report examines the issue of whether the UK is food secure across five 'themes.'

Theme 1: Global Food Availability looks at food security in terms of supply and demand at a global level. It is concerned with the security and stability of the international food supply system, on which the UK relies for nearly half of its food. It assesses trends in global agriculture and food production set against population growth, the impacts of climate change and other factors on food production, and the state of key inputs to agriculture, such as labour, water and fertiliser. It also looks at trends in global trade, which is essential for the UK to access food produced abroad.

Theme 2: UK Food Supply Sources looks at food security in terms of where the UK gets its food. It focuses specifically on the UK's principal sources of food at home and overseas. It describes the UK's domestic production, and trends in agricultural productivity; fisheries; and food manufacturing. It considers important factors in maintaining domestic productivity, such as soil health; pesticide use; and biodiversity. It discusses the principal sources the UK relies on for its food imports, and food waste in the system. It also considers the indicators which will help future reports assess the food security impacts of the UK's 2020 departure from the European Union, both in terms of changes to domestic production practices and to the UK's trading relationship with the world. As a number of these factors would not be expected to change significantly in the short term, longer term monitoring of these indicators will be required to fully understand the impacts.

Theme 3: Supply Chain Resilience looks at food security in terms of the physical, human and economic infrastructure underlying the supply chain. It describes the sophisticated infrastructure of just-in-time supply chains, their strengths and potential vulnerabilities. It considers how the supply chain responds to issues, for example the impacts the Covid-19 pandemic had throughout the supply chain. It also describes the risk of cyber-attacks, labour issues in the supply chain, and other significant vulnerabilities.

Theme 4: Food Security at Household Level looks at food security in terms of whether households can reliably afford and access sufficient healthy and nutritious food. It discusses the affordability of food and drink, in real terms and compared to other living costs. It considers whether people have access to food shops. The theme covers household food security levels in the UK and breaks this down into various factors that may impact these levels. It also looks at the use of food aid in the UK including during the COVID-19 pandemic.

Theme 5: Food Safety and Consumer Confidence looks at food security in terms of the perceived and actual safety and authenticity of food in the UK. It describes the inspections and surveillance regime for ensuring food standards in

the UK are upheld and examines trends in food safety issues such as food crime, foodborne pathogens, labelling and metrics on public trust in the food system.

How to read the UKFSR

Each theme of the UKFSR begins with an introduction, which sets out the broader context and reasoning behind the theme, and a summary, which provides the headline conclusions. The body of each theme is then comprised of indicators and case studies, each of which sets out a specific aspect of food security and the available data.

Each indicator, in turn, has a *Headline* summary and a more detailed *Context and Rationale* section for why the indicator has been included. A *Data and Assessment* section then sets out the relevant data and what it tells us. Finally, a *Trends* section articulates what this assessment means in terms of food security and what can usefully be observed. Where there is an observable past or future trend in the data, this section will articulate it. Relevant information on survey methodology and notes explaining specific concepts are included in an annex.

The great variety of data sources and the different collection periods of the available information mean it is not always possible to talk about every indicator in the exact same way. Some indicators contain data that has only recently started to be collected and therefore, this iteration of the UKFSR can only serve as a starting point for a future time series.

The UKFSR is not a policy document. Its purpose is to understand the landscape and the issues at stake, and to set out and interpret the best available evidence regarding food security. It is not a showcase of current or future government policy. It aims to provide policymakers across the UK nations with the best possible information and analysis they need to maintain the UK's food security, in all its many aspects.

Theme 1: Global Food Availability

This chapter of the UK Food Security Report looks at the food security of the United Kingdom in terms of supply and demand at a global level. It is concerned with the security and stability of the international food supply system. It assesses trends in global agriculture and food production set against population growth, the impacts of climate change and other factors on food production, and the state of key inputs to agriculture, such as labour, water, and fertiliser. It also looks at trends in global trade, key for the UK to access food produced abroad.

In terms of this theme, food security means stable global production and a well-functioning global trading system that reliably, efficiently and sustainably meets the needs of the UK and the world.

Key messages

- Global food supply and availability has improved since 2010, which is a positive sign for the UK's overall food security.
- The coronavirus (COVID-19) pandemic caused some disruption to trans-boundary supply chains but global trade in products is expected to recover and to continue in the long term.
- Projected growth in agricultural production will be largely due to increasing cereal yields and efficiency improvements in meat and dairy production, and less due to expansions in agricultural land and herd size growth.
- Several factors threaten the stability and long-term sustainability of global food production: climate change and climate variability, biodiversity loss caused by agricultural land expansion, and overexploitation of natural capital resources, including fish stocks and water resources. Current data on undernourishment as well as obesity levels across the world may indicate that global food production is not equitably meeting populations' nutritional requirements, including the UK's.

The UK has relied on imported foodstuffs to supplement domestic production for over two centuries and currently almost half of food consumed in the UK is imported, although the UK is around 75% self-sufficient in foodstuffs that can be produced domestically. Sourcing food from global markets contributes to the UK's food resilience. Diverse supply chains and global trade in agricultural and food commodities reduce the risk of food becoming unavailable and, as the risks are shared across the globe, can mitigate price shocks. As the risks are shared across the globe. It also allows consumers to access fresh, out-of-season foods which cannot be produced in the UK. However, an over-reliance on global trade can expose food supplies to global risks including logistical, political, and production disruption.

Balance of Global Food Production and Consumption

As the world population continues to grow from 7.7 billion people in 2021 to an estimated 8.5 billion in 2030, it is essential to understand how agricultural production levels will keep up with growing food demand.¹

The rate of increase in global food production output per capita currently outpaces global food demand, though global food production is unevenly distributed across regions. For the UK, global food sources are secure and expected to remain so for the coming years. However, substantial amounts of food are lost or wasted across the global supply chain. Reductions in loss and wastage could increase the sustainability of food production.

Stock to consumption ratios are an indicator of global resilience to food shortages and price stability. Food stocks can serve as buffers to supply or demand shocks. If stocks are low, markets become more sensitive to any potential shocks and the probability of price spikes increases. The world's stock to consumption levels fluctuate, with good harvests leading to higher stocks.

Cereal yield growth rates have been growing at a slower pace since 2010, compared to earlier periods, but are keeping pace with overall global food demand. Some of the main risks for cereals in the future will be climate variability and change, and the effects it will have on cereal growth rates in different regions. Changing climate, pests and diseases, harvest losses, inefficient use of inputs, and under-investment can all hamper yields and yield growth. Evidence indicates that between 20% and 40% of global crop production is lost annually due to plant diseases and pests. Impacts of wheat rust diseases on the world's wheat production are of note for the UK's food security.

Current stocks are healthy with the exception of soybeans. Poor soybean harvests or other supply disruptions could cause price fluctuations and present a risk to imported soy-based animal feed, an important input into UK meat production.

Global meat production has grown significantly since 2010 and is projected to increase over the coming years. Consumption increases are likely to vary, with high-income countries potentially having reached peak meat consumption per capita, and lower- and middle-income countries expected to see more increases in consumption rates. Milk production is also set to continue to increase, mainly driven by improvements in efficiency and less due to increases in herd size. Animal disease outbreaks in the late 2010s have substantially reduced pig herd numbers, particularly in China.

¹ UN, 'World Population Prospects 2019: Data Booklet', <https://population.un.org/wpp/>.

While most of the fish stocks that the UK relies on are considered sustainable, global fish stocks are overexploited. Consumption of fish has increased globally in the last two decades (including in the UK), while the proportion of fish stocks at biologically sustainable levels has fallen. Around one third of all stocks are being fished at unsustainable levels. As well as overfishing, stocks are at risk from the effects of climate change, particularly through ocean acidification and algal blooms.

Overall, the global availability of agricultural commodities is driven by the fundamental market forces of supply and demand and exchange rate dynamics. Population growth will play the most significant role in food demand growth over the coming years. Increasing incomes in low- and middle-income countries are likely to lead to increased calorie consumption and meat consumption. In high-income countries other factors, such as health and environmental concerns, are likely to be more relevant in determining consumers' food preferences.

Shorter term shocks to supply and demand also influence price. The financial crisis of 2007 to 2008 caused a significant price spike, followed by a gradual decline. The COVID-19 pandemic led to new price spikes, albeit not as severe as that which followed the financial crisis. The Food and Agriculture Organisation of the United Nations (FAO) projects that real prices will return to a general downward trend once COVID-19 measures have been lifted.

Agricultural inputs

Agricultural production puts strain on key inputs such as fertilisers and labour as well as natural capital resources such as water, soil, and land. Increased global pressure to intensify food production to meet demand may also exacerbate the harmful impacts agricultural practices and the food system have on the environment and wildlife in the form of habitat destruction and pollution. Combined, these may undermine the fundamentals upon which production systems rely if production cannot become more sustainable.

Around one third of the land on Earth is used for growing food. This proportion has stayed broadly stable since 2010, although there has been a decline in forest land and some significant regional changes, particularly in South America. Most projected increases in global food production are the result of more intensive practices rather than of the creation of new farmland. Both increases in agricultural land and intensified production pose a threat to biodiversity. The role of biodiversity in food production is crucial: more than 75% of the leading types of global food crops rely to some extent on animal pollination for yields and/or quality.

Fertilisers are key to global industrial farming methods. Phosphate rock is the only large-scale source of phosphorus, an essential element for plant growth and an important chemical fertiliser. The UK has no phosphate reserves and relies on imports. Phosphate consumption has declined both in the UK and globally as a result of more efficient usage, and known reserves of exploitable phosphate rock have increased since 1995.

Water is essential to food production. Agriculture accounts for around 70% of fresh water withdrawn (from rivers, reservoirs, or groundwater extraction) globally. Water withdrawals for irrigation have increased globally, most significantly in Organisation for Economic Development (OECD) and EU countries. However, they have declined in the Middle East and North Africa. Climate change is likely to increase the importance of irrigation relative to rainfed agriculture and increase pressures on water withdrawals. There has been a strong trend towards the use of more water-efficient crops and better water management practices. Higher water efficiency can also be gained by using nitrogen-based fertilisers.

The availability of agricultural workers is an important factor in global food production and on global food supply. The number of people employed in agricultural labour has decreased globally since 2010 by 44.5 million due to productivity increases and mechanisation. Besides permanent agricultural workers, seasonal workers are required to meet fluctuating demand across the world. The COVID-19 pandemic, however, has highlighted how the sector's reliance on seasonal workers for critical harvesting periods can be a potential risk to production if there are factors that reduce the availability of these workers.

Global commodity markets

Global trade in agricultural and food products plays an essential role in providing food security for the UK, but also for the rest of the world. Volume and freedom of trade are key, as is diversity of global supply into those markets.

The proportion of agricultural products traded has increased since the 2000s. A growing global trade in agricultural products increases resilience to supply shocks affecting geographical areas and allows for a more efficient global food supply chain. However, reliance on the global trading system increases vulnerability to events, such as trade restrictions, which disrupt the system. The COVID-19 pandemic caused some disruption to trans-boundary supply chains but global trade in products is expected to recover and continue growing in the long term.

High concentration of a particular commodity in a few countries could have negative impacts on price, supply, and food security globally. Since 2010 Ukraine has increased its market share for maize, reducing the overall concentration of world supplies. Brazil is now the world largest producer and exporter of soybeans

representing an overall increase in the concentration of soybean production across the world over the last decade. India is now the world's biggest producer of rice, where there has been a recent uptick in concentration of world supply in the last few years. Russia is now the world's biggest producer of wheat, while concentration of wheat production around the world has remained stable along with most other major agricultural commodities. Palm oil and soybean oilseed represent the two commodities with the most concentrated production globally. No major changes are expected for the concentration in world agricultural commodity markets and the top exporting countries of these commodities. Over the last decade, stable trade relations with key exporters have ensured that the UK's access to global food supplies remains secure. The emergence of other exporting countries such as Vietnam for rice, and continued strong trade relations with key exporting countries, will further support the stability of the UK's access to food.

Indicator 1.1.1 Global output per capita

Headline

The rate of increase in global food production output per capita now outpaces global food demand. This means that the global food sources that the UK accesses are secure and expected to remain so in the coming years. However, substantial amounts of food are lost or wasted across the global supply chain. Global food production is unevenly distributed across regions. In addition, growth in obesity and malnutrition may indicate that global production is not meeting nutritional needs.

Context and Rationale

Global production of food relative to global population size is a fundamental indicator of global food security. Demographic and demand increases, availability of suitable land, water resources, bio-fuel production, climate change, and other factors play an important role in determining the levels of global food production and availability.

A secure global food supply is essential to guaranteeing the availability and affordability of food in the UK in the long term. Any deterioration in global availability, or associated increases in prices, will also impact the UK's food security.

While evidence suggests that, at the global level, agricultural production can be increased enough to satisfy the additional demand projected to 2050, fair resource distribution across all countries will remain a challenge, as outlined further in **Indicator 1.2.2**. Moreover, there are indications that food prices can be volatile. Economic shocks such as the financial crisis, disease outbreaks, and extreme weather events can adversely impact production and consumption costs leading to spikes in food prices. This volatility could lead to a call for a more sustainable use of food and inputs needed to grow food. This is discussed in more depth in **Indicators 1.1.7, 1.1.8, and 1.1.9**.

Food waste in medium and high-income countries occurs largely at the consumption stage, arising from consumer behaviour. In lower-income countries, food is lost mainly within the food supply chain before it reaches the consumer. These losses are due to financial, managerial, and technical limitations in harvesting techniques, as well as poor storage and cooling facilities in difficult

climatic conditions. Inadequate infrastructure, transportation, packaging, and marketing systems also contribute.²

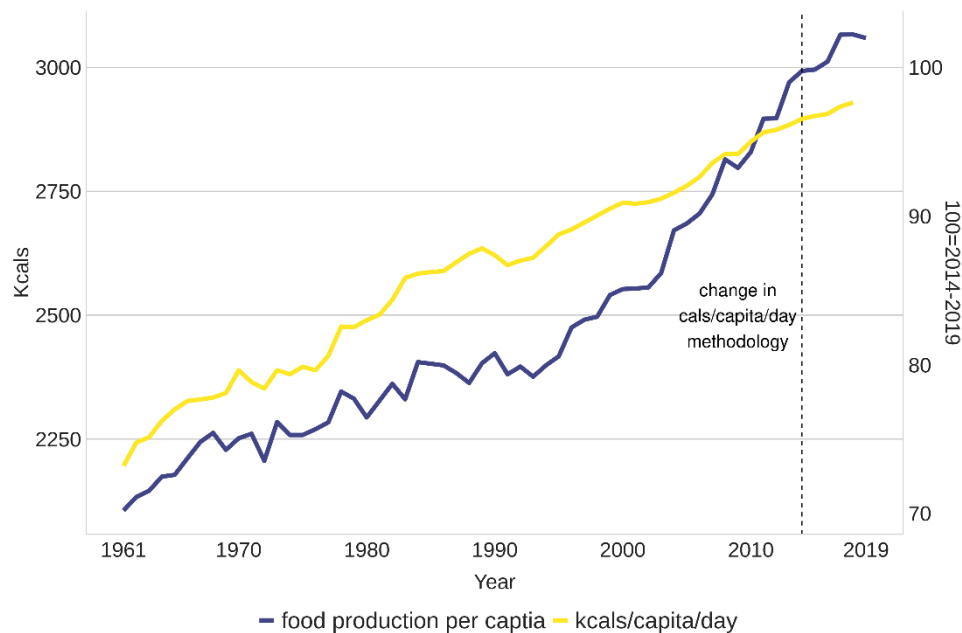
Data and Assessment

Indicator: Calories and world agricultural production per person; global food loss and waste

Source: FAO; UNEP Food Waste Index Report 2021; Fefac; Alltech

Figure 1.1.1a: World food production per capita 1961-2019

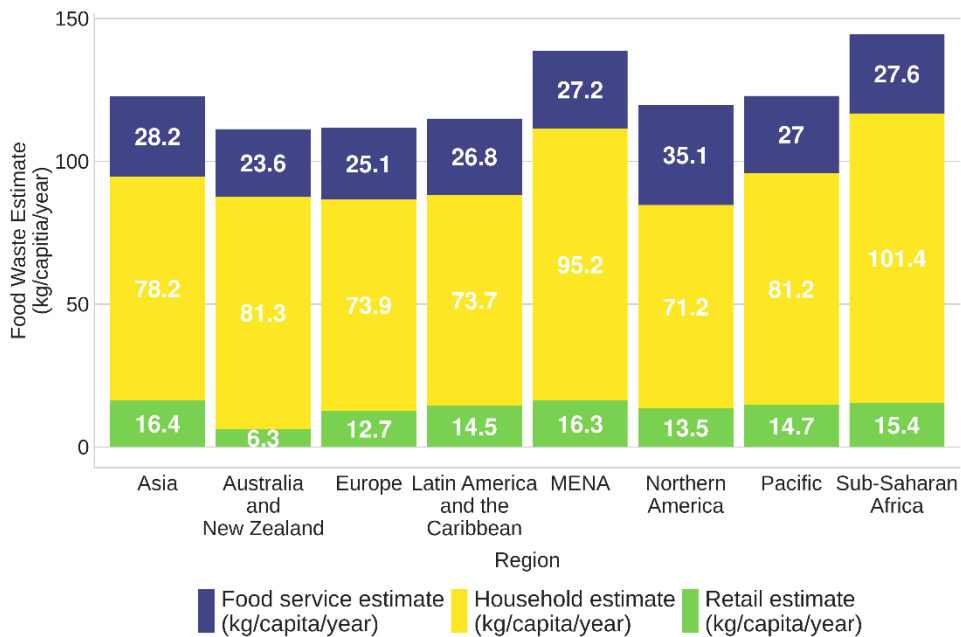
(See appendix for an explanation of index numbers.)



Food production per capita has risen since the 1960s. The rate of increase in the production of food now outpaces the increase in calorie demand per capita. The food production index includes seed and feed, which is not intended for human consumption and therefore slightly skews the real availability of food for humans. The use of animal feed has also increased significantly since 2012 by 149 million tonnes per annum to 1,103 million tonnes in 2019 as is shown in figure 1.1.1d.

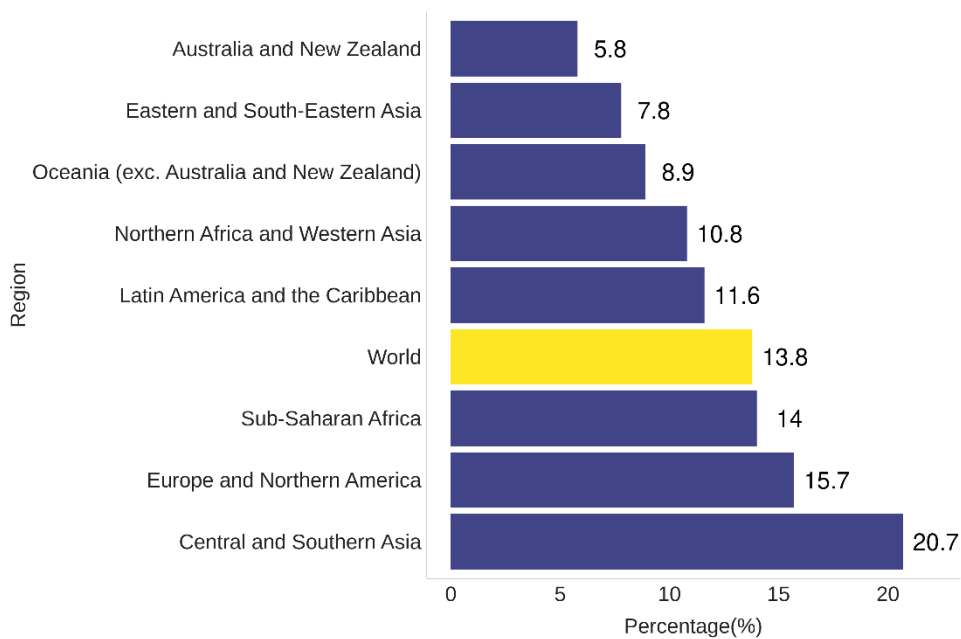
² UNCTAD, 'Goal 12: Responsible consumption and production', <https://stats.unctad.org/Dgff2016/planet/goal12/index.html>.

Figure 1.1.1b: Food waste at food service, household, and retail level per region, kg/capita/year from UNEP 2021 Food Index



The quality of data on food waste varies significantly by region. Drawing any definite conclusions on regional variation is therefore problematic. From available data, food waste per capita appears relatively constant globally. Household food waste accounts for the largest proportion of food waste.

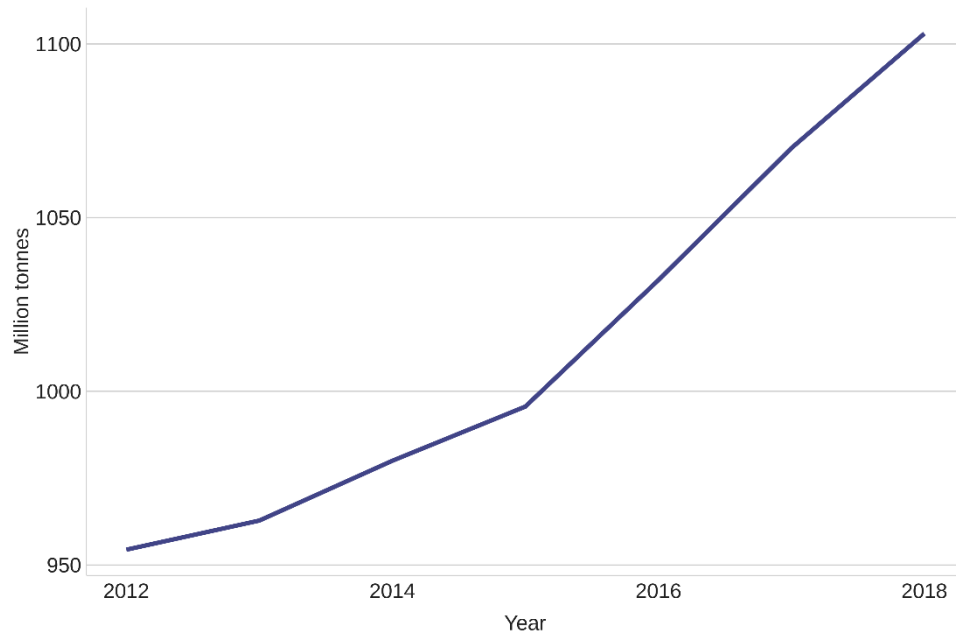
Figure 1.1.1c: Percentage of food loss by region, 2016



Food loss, as shown in figure 1.1.1c, is highest in Central and Southern Asia at 20.7%, followed by Europe and Northern America at 15.7% and Sub-Saharan

Africa at 14%. All these regions exceeded the world average percentage of food loss of 13.8%. Australia and New Zealand have the lowest food waste percentage globally at 5.8%.

Figure 1.1.1d: Animal Feed consumption at global level, million tonnes 2012-2018



Trends

Global food production output has been on a permanent upward trend, with enough calories being produced to feed the growing world population now and in future years. Therefore, the UK's ability to meet its import demands from global food production is in a good state. Risks concerning global food production levels are discussed in more detail in **Indicators 1.1.2, 1.1.5, 1.1.6, 1.1.7.**

The Food and Agriculture Organization (FAO) of the United Nations projects that global agricultural production will increase by 1.4% per annum over the next ten years if most COVID-19 measures are lifted by the end of 2021. This is a slightly slower growth rate compared to the last decade, which saw an increase of 1.7% per annum. Most of the agricultural production growth will likely take place in low-income countries. These increases will be driven by productivity-increasing investments in agricultural infrastructure and research and development, wider access to agricultural inputs and improved management skills. High-income

countries will contribute less to production growth, mainly due to constraints imposed by environmental policies.³

Although calories per capita are rising globally, distribution is unequal. The UN estimates that between 720 and 811 million people were undernourished in 2020. This constitutes an increase from 650 million in 2019 as a result of the COVID-19 pandemic.⁴ Moreover, the type of food that makes up the consumed calories also plays an important role in determining whether the world population can meet their nutritional requirements. Some regions still suffer from undernourishment, while others are dealing with increasing obesity levels.

Indicator 1.1.2 Cereal yield growth rates by region

Headline

Growth in cereal yields is keeping pace with overall global food demand, although has been slower in the last decade compared to earlier periods. Some of the main risks for cereal production in the future will be climate variability and change, and the effects these will have on the growth rates in different regions.

Context and Rationale

Yield growth rates are an important measure to assess the world's supply of food. Yields measure the harvested production per unit of harvested area, and yield growth denotes an increase in harvested production within a unit of area. Historically, yield growth has been a key factor in food production increases. It is expected that most of the increase in production over the next 40 years will also come from improved yields and less so from expansions in agricultural land.⁵

The agricultural sector is both affected by and the cause of some risks. Changing climate, pests and diseases, harvest losses, inefficient use of inputs, and underinvestment can all hamper yields and yield growth. Some of these risks are further outlined below. Efficient applications of fertiliser and water usage are key factors in yield growth. However, yield growth driven by applying greater quantities

³ FAO, 'OECD-FAO Agricultural Outlook 2021-2030', <https://www.fao.org/publications/oecd-fao-agricultural-outlook/2021-2030/en/>.

⁴ Action against Hunger. 'World Hunger: Key Facts and Statistics 2021', <https://www.actionagainsthunger.org/world-hunger-facts-statistics>.

⁵ FAO, 'World Agriculture towards 2030/2050: The 2012 revision', <https://www.fao.org/global-perspectives-studies/resources/detail/en/c/411108/>.

of fertiliser and water can be environmentally damaging. Fertilisers and water resources are covered in more depth within **Indicators 1.1.8, 1.1.9, and Theme 2** in this report.

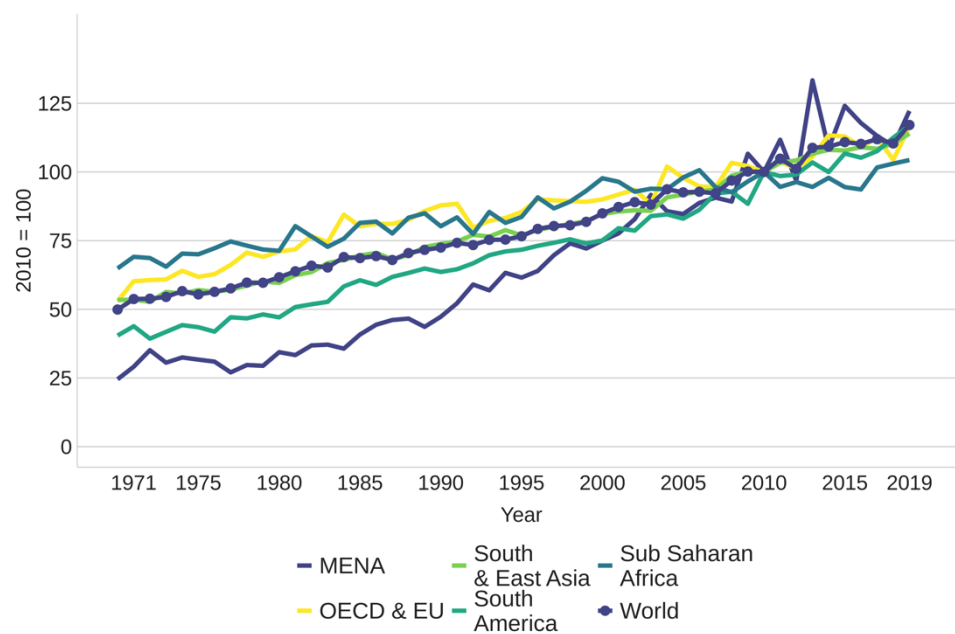
Data and Assessment

Indicator: Cereals yields and yield growth rates

Source: FAO

(See appendix for further information on OECD and an explanation of index numbers.)

Figure 1.1.2a: Cereal yield growth rates by region 1970-2019



Note: 2010 is designated as the base year for this graph to measure the growth rate against.

Figure 1.1.2b: Cereal yields and yield growth rates by region

Area	Yields(tonnes)				Growth of Yields	
	1970	1999	2009	2019	1999-2009	2009-2019
MENA	1.1	3.2	4.7	5.4	47.8	14.6
OECD & EU	2.5	4.3	4.9	5.6	14.6	14.0
South & East Asia	2.0	3.1	3.7	4.2	21.7	14.0
South America	1.6	3.0	3.6	4.7	19.5	32.2
Sub-Saharan Africa	1.0	1.4	1.4	1.5	3.7	8.1
World	1.6	2.7	3.3	3.8	22.4	16.9

Cereal yields have increased dramatically since the 1970s. Since 2011, however, growth of yields has significantly slowed. This can be seen in the Middle East and North Africa (MENA), which had a 14.76% growth between 2009 and 2019 compared with a 47.98% growth between 1999 and 2009. This represents a greater volatility in the yield in the last decade than previously seen. South America saw the largest acceleration in growth in yield at 32.2% over the last decade.

Trends

Data from the FAO suggests that the increase in improvements in yields in the last two decades can mostly be attributed to increased use of irrigation, pesticides and fertilisers, better farming practices, and the use of high yield crops. Increased growth rates, therefore, are largely due to improved technologies rather than expansions of cultivated areas.⁶

Although yield growth rates have been slowing down in recent years, this should not be taken as cause for concern given that overall food production, as outlined in indicator 1.1.1, has been increasing and is projected to continue to do so. Falling real commodity prices have reduced some of the incentives to improve yield growth at the same pace as in the late 20th century.

⁶ FAO, 'World Food and Agriculture: Statistical Yearbook 2020', <https://www.fao.org/family-farming/detail/en/c/1316738/>.

The FAO estimates that global crop production will grow by 18% over the next ten years. 88% of this growth is expected to come from yield improvements. The additional output is projected to mainly originate in the Asian and Pacific region. Lower-income countries will improve their yields through better adapted seeds and improved crop management. In high-income countries, yield increases will come mainly from improvements in cultivated varieties and the adoption of precision farming technology to optimise the application of inputs.⁷

Despite the current positive status and projections for cereal yields, there are concerns about how climate variability and change will impact future yield growth rates. These risks, and how they could impact the UK's food supply chains, are discussed in further detail below.

Risk: Global dimensions of climate variability and change

The UK's food security is dependent on growing conditions in other parts of the world. Not only does the UK import 45% of the food it consumes, large parts of animal feed for the UK's domestic production are also imported. Climate variability presents a risk to the availability and stability of these supplies. The likelihood of yield reductions is expected to increase due to more frequent adverse weather conditions such as droughts, floods, and hurricanes, or due to food production being pushed out of its safe climatic space. Beyond primary production, changing climate variability may also affect the way food is processed, stored, and transported, which could impact on food quality, quantity, and prices.

Around 80% to 85% of wheat milled in the UK is home-grown, with 1 to 2 million tonnes per year imported, half of which comes from France, Germany, and Canada.⁸ While typical year-to-year UK wheat yield variations are not highly correlated with those in France, Germany or Canada, simultaneous yield reductions can occur because of large-scale weather patterns that result in droughts and floods. Climate change is projected to increase the occurrence of adverse conditions including droughts and floods, and is, therefore, expected to increase the likelihood of yield shocks.

The United States and China combined provide 60% of the world's maize and are, therefore, crucial to global food security. Severe water stress is known to be a risk factor for maize production, with climate models showing up to a 6% chance per decade that these conditions could occur simultaneously in the United States and

⁷ FAO, 'OECD-FAO Agricultural Outlook 2021-2030', <https://www.fao.org/publications/oecd-fao-agricultural-outlook/2021-2030/en/>.

⁸ UK Flour Millers, 'Information Centre: Statistics', <https://www.ukflourmillers.org/statistics>.

China. These conditions are also expected to occur more frequently in the future as the climate continues to warm, increasing the likelihood of experiencing large reductions in global maize availability. While most of the 1 to 3 million tonnes of maize imported by the UK each year come from Europe, maize yield shocks in the United States and China could affect global markets and UK access to maize. Domestic production of maize is increasing, in part because of a warming climate, which may partly offset increased risk of international production shocks.

The UK typically requires 2.5 to 3 million tonnes of soybean products every year, used primarily for animal feed, human consumption, and pharmaceutical or industrial purposes. Virtually all soybean requirements are currently met by imports, the vast majority of which come from Argentina, Brazil, and the USA – the world's largest soybean producers and exporters. The high concentration of soybean production in the Americas means that global soybean supplies are vulnerable to adverse weather conditions, such as droughts and floods, which are expected to become more frequent in a warmer climate. In addition, China is the world's largest importer of soybean products, primarily for animal feed. China's increasing demand for consuming meat products fed on soybean may therefore affect the UK's access to soybeans.

Case Study 1.1 Plant diseases and pests

Overview

Plant diseases and pests have the potential to have significant impacts on global food availability. The FAO estimates that 20% to 40% of global crop production is lost annually due to plant diseases and pests. Climate change may alter the range or increase frequency of plant diseases and pest incidence. Impacts of wheat rust and Panama Disease on the world's wheat and banana production are of note for the UK's food security.

Background

More than half of the world's calories come from a limited number of varieties of three 'mega-crops': rice, wheat, and maize.⁹ Plant diseases and pests affect global food availability and food security in that they can cause significant food losses, with impacts being especially severe if they affect staple food production. The FAO counts locusts, armyworm, and fruit flies among the most destructive

⁹ International Development Research Centre, 'Facts and Figures on Food and Biodiversity 2010', <https://www.idrc.ca/en/research-in-action/facts-figures-food-and-biodiversity>.

plant pests, and banana disease, cassava disease, and wheat rust among the most harmful plant diseases. Climate change, trade, passenger movement, and reduced resilience in production systems due to agricultural intensification all risk increasing the spread of these diseases and pests.¹⁰

Discussion

The FAO estimates that 20% to 40% of global crop production could be lost because of plant and pest diseases each year.¹¹ A recent scientific review undertaken by the International Plant Protection Convention, which is overseen by the FAO, has concluded that climate change will likely alter or increase the risks of plant diseases and pests. These risks include range expansion or retreat of certain diseases and pests, increased risks of disease or pest introduction, as well as increased pest population growth rates. Although the overall risk trend for plant and pest diseases to occur is expected to increase due to climate change, there are some regional variations. For instance, some studies¹² show that the risk for diseases affecting rice in the Philippines may reduce. In general, most pests, weeds, and diseases tend to favour higher temperatures up to a certain threshold, which means that climate change might increase risks within a type-specific temperature range.¹³

Most recently, outbreaks of desert locust in Eastern Africa, Southwest Asia, and the Red Sea area in 2020 and 2021 caused significant impacts on crops and pasturelands. This upsurge in desert locust was caused by favourable climatic conditions. While there are various locust species, the desert locust is considered the most important species and the most destructive migratory pest in the world. Large swarms can pose serious food security risks, either locally or at a wider scale, depending on the affected region. A single square kilometre of locust swarm can contain up to 80 million adults, with the capacity to consume the same amount of food in one day as 35,000 people. Food security impacts due to desert locust in Eastern Africa have mainly been contained to the region.¹⁴

¹⁰ FAO, 'Plant pests and diseases', <https://www.fao.org/emergencies/emergency-types/plant-pests-and-diseases/en/>.

¹¹ FAO, 'International Year of Plant Health 2020', <https://www.fao.org/plant-health-2020/about/en/>.

¹² Luo, Y., D.O. TeBeest, P.S. Teng, and N.G. Fabellar, Simulation studies on risk analysis of rice blast epidemics associated with global climate change in several Asian countries, *Journal of Biogeography* 22 (1995), pages 673 to 678; Luo, Y., P.S. Teng, N.G. Fabellar, and D.O. TeBeest, 'The effects of global temperature change on rice leaf blast epidemics: a simulation study in three agroecological zones', *Agriculture, Ecosystems and Environment* 68 (1998), pages 187 to 196.

¹³ FAO, 'Scientific review of the impact of climate change on plant pests – A global challenge to prevent and mitigate plant pest risks in agriculture, forestry and ecosystems' (2021), <https://www.fao.org/documents/card/en/c/cb4769en>.

¹⁴ FAO, 'Desert Locust', <https://www.fao.org/locusts/en/>.

With wheat being a key global source for food and feed, it is worth noting the impacts that various strands of wheat rust, a disease caused by fungal pathogens, can have on global food production levels. Wheat rust diseases are counted amongst the most serious biotic (meaning resulting from living organisms) risks to wheat productivity levels. The most common wheat rusts include stem rust, stripe rust, and leaf rust. While these diseases can threaten the production in any wheat-growing region, the areas currently affected or at most risk include North and East Africa, the Near East, Central Asia, and some Asian countries.¹⁵ The FAO estimates that around 30% of global wheat production stemming from the previously mentioned regions are at risk of being impacted by wheat rust diseases. Rust diseases are also among the major concerns in more developed wheat producing countries. Due to improved technology, capacity, and awareness, however, the implementation of management strategies is easier and has reduced some risks.¹⁶

The FAO counts the banana as the most important fruit in the world. In the UK, too, bananas make up large parts of a person's total fruit consumption based on Kantar data. Four races of the Panama Diseases, which pose a risk to different banana varieties, have been identified to date. Due to race one of the Panama Disease, banana producers had to shift from the Gros Michel banana variety in the 1950s to the Cavendish variety used today. Race four, a more recent strain of the disease, however, can infect the Cavendish variety. With the Cavendish banana being the only traded variety, and no existing disease control available yet, this disease poses a serious risk to global fruit consumption.¹⁷

Indicator 1.1.3 Real agricultural commodity prices

Headline

Agricultural commodity prices reflect the results of global supply and demand for particular commodities. They are relevant both to the availability of foodstuffs and to the prices consumers pay for food. The financial crisis caused a significant price spike, followed by a gradual decline. The COVID-19 pandemic led to new price

¹⁵ FAO, 'Strengthening capacities and promoting collaboration to prevent wheat rust epidemics' (2014), <https://www.fao.org/food-chain-crisis/resources/news/detail/en/c/234243/>.

¹⁶ FAO, 'NSP-FAO Wheat Rust Disease Global Programme', <https://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/wrdgp/en/>.

¹⁷ Safe Food, 'The Impact of Plant Diseases', <https://www.safefood.net/food-safety/news/impact-plant-diseases>.

spikes, albeit not as severe as ten years ago. The FAO projects that real prices will return to a general downward trend once COVID-19 measures have been lifted.

Context and Rationale

This indicator reflects the global availability of agricultural commodities as it is driven by the fundamental market forces of supply and demand and exchange rate dynamics. Higher prices signal relative shortages, whilst falling prices signal improved supply or even oversupply. Higher prices give an incentive for producers to increase supplies and for consumers to reduce demand. It is partly an outcome indicator of any underlying supply issues, and a leading indicator of potential price changes to consumers.

Many factors can affect commodity prices, including favourable or poor harvests, production costs, market structure, and external factors, such as economic sanctions. The food supply chain includes the transformation of goods and the incorporation of services along the chain. Its characteristics mean that price shocks are at times absorbed by producers or passed on to consumers. In general, prices of agricultural commodities have been following long-term downward trends.¹⁸ This has been the result of productivity improvements in agriculture and related industries, which has lowered the marginal production costs of the main food commodities. Deviations from the general trend, such as price peaks during 2007 to 2014, were temporary and did not alter the long-term declining trend.

Commodity prices send the appropriate signals when the global market is over or undersupplied. In the medium to longer-term, supply and demand of agricultural commodities would ideally be in balance and be reflected in relatively affordable prices.

Data and Assessment

Indicator: Global real prices for selected agricultural commodities

Source: UNCTAD; OECD-FAO Agricultural Outlook

¹⁸ Our World in Data, 'Real commodity price index, food products', https://ourworldindata.org/grapher/real-commodity-price-index-food-products?country=~OWID_WRL.

Figure 1.1.3a: Commodity prices for palm oil, rice, soybeans, wheat January 1995-April 2021

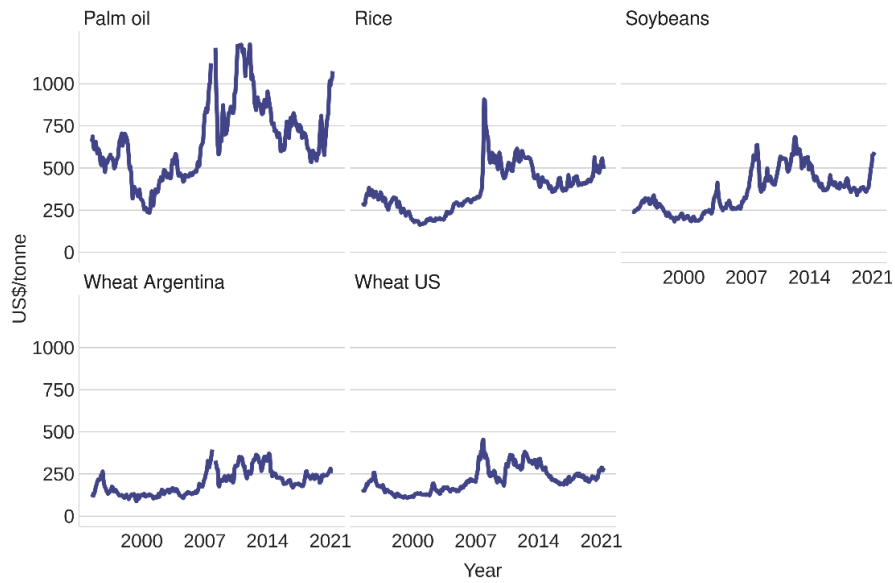


Figure 1.1.3b: Commodity prices for beef January 1995-April 2021



Figure 1.1.3c: Commodity prices for sugar January 1995-April 2021

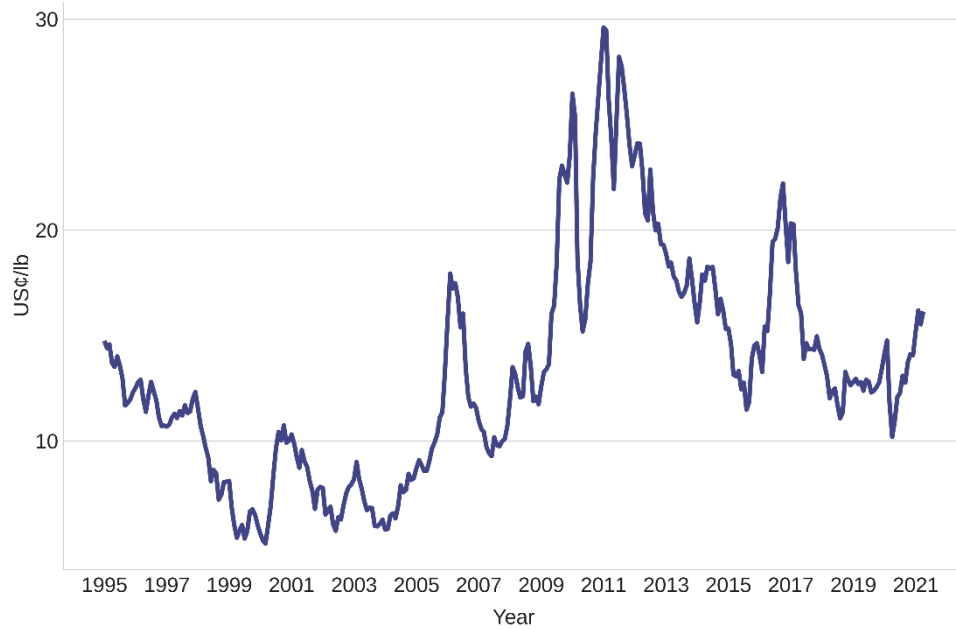
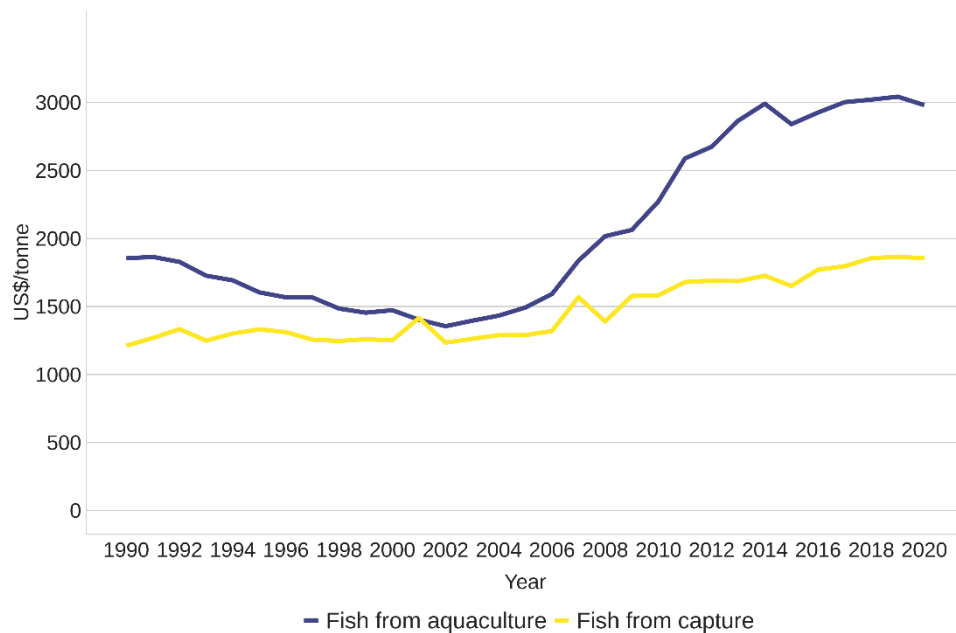


Figure 1.1.3d: Commodity prices for fish 1990-2020



There was a sharp spike in commodity prices during the financial crisis. Prices started to rise again in late 2010 and early 2011 and remained at inflated levels until early 2016. This was much longer than has been seen in previous commodity

price spikes.¹⁹ Palm oil and sugar were particularly badly affected. There have also been price spikes in sugar and beef which are not part of this general trend. The beef price has shown strong growth since the turn of the century whilst still being affected by the same variation in price as previously described. This is likely to be due to rising demand for red meat in emerging economies such as Brazil. Fish prices have risen steadily in the last decade, with a greater increase in price rises from aquaculture than from capture.

After an initial drop in the first quarter of 2020, there have been sharp commodity price rises during the COVID-19 pandemic. Beef, palm oil, soybeans and sugar have been particularly strongly affected, showing strong rises in 2021. The sugar price drop was fuelled by a slump in the crude oil price which led to a lower demand for sugar cane for ethanol production.

Trends

Global events can have a significant impact on supply and demand, which in turn affects global commodity prices. This was the case for 2020, where many of the price highs not seen since the mid-2010s experienced in commodities such as wheat, rice, soybeans, and palm oil have been attributed by the FAO to the COVID-19 pandemic. While the current situation for real commodity prices (Real prices denote the value of a commodity after adjusting for inflation expressed in constant dollars, which reflects buying power relative to a base year) means that prices are above the general downward trend, the FAO expects real prices for most commodities to decline over the next ten years. Any future events either at the global level or in agriculturally significant regions may, however, lead to unexpected price spikes.

Real wheat prices are expected to decline in the coming years based on large supplies being produced in the Black Sea region and slow growing global food demand. Assuming a return to normal growing and logistical conditions, export prices for rice, that may impact on prices in the UK, are expected to decrease to trend level by 2023, with declines thereafter promoted by ample global availabilities and intensifying competition for markets amongst exporters.

Real soybean and palm oil prices are expected to return to trend levels in the early 2000s, reflecting an increase in global supply. This is based on average production prospects in major producing countries, and the gradual elimination of COVID-19 related logistics constraints. After this correction, the declining price trend is expected to slow. This price trend will be subject to multiple uncertainties,

¹⁹ FAO, 'World Food and Agriculture: Statistical Yearbook 2020', <https://www.fao.org/family-farming/detail/en/c/1316738/>.

such as weather variations in major producing countries and shifts in demand preferences. China's demand for soybean imports in their effort to rebuild their pork production following the African Swine Fever outbreak (see African Swine Fever case study) will also play a crucial role in determining market outcomes in the coming years.

Meat prices are anticipated to rebound from COVID-19 induced lows in 2020 and to rise moderately over the medium term as demand recovers due to the reopening of the hospitality sector. Thanks to ongoing feed productivity gains within the meat sector, feed price increases will have less of an impact on meat prices.

Real sugar prices are projected to resume their long-term decline due to productivity gains from better yields. Overall, real prices should fall below the average level of the last twenty years, when prices were under upward pressure due to competition for the land from growing biofuel crops. Some domestic policies and the dominance of few exporters, however, may result in some price variability of international sugar prices over the next ten years.²⁰

Real fish prices are expected to decline slightly over the next decade, though remaining relatively high. There may be some price volatility for individual fish species due to supply and demand fluctuations. In addition, as aquaculture is expected to represent a higher share of world fish supply, prices for fish from aquaculture could have a stronger impact on overall fish price formation in international markets.²¹

Indicator 1.1.4 Stock to consumption ratios

Headline

Stored stocks of agricultural commodities serve as an important buffer against poor harvests and demand shocks. The world's stock to consumption levels fluctuate, with good harvests leading to higher stocks. Current stocks are healthy with the exception of soybeans. Poor soybean harvests or other supply disruptions

²⁰ FAO, 'OECD-FAO Agricultural Outlook 2021-2030', <https://www.fao.org/publications/oecd-fao-agricultural-outlook/2021-2030/en/>.

²¹ FAO, 'The State of World Fisheries and Aquaculture 2020', <https://www.fao.org/documents/card/en/c/ca9229en>.

could cause price fluctuations and present a risk to imported soy-based animal feed, an important input into UK meat production.

Context and Rationale

Stock to consumption ratios are an indicator of global resilience to food shortages and price stability. Food stocks can serve as buffers to supply or demand shocks. If stocks are low, markets become more sensitive to any potential shocks and the probability of price spikes increases.²² Therefore, observing stock to consumption ratios can serve as an early warning for possible shortages and price spikes, and enable an early response to potential food security risks. Especially for crops, supply shocks are a regular feature of the market, which is why this indicator focuses on cereals.

Sufficient stock levels provide the market with some resilience to supply or demand shocks. It is, however, difficult to establish an ideal stock ratio as high stock levels could also indicate a structural oversupply of markets. Any changes in the stock ratio also require careful interpretation to fully understand the root causes and possible effects.

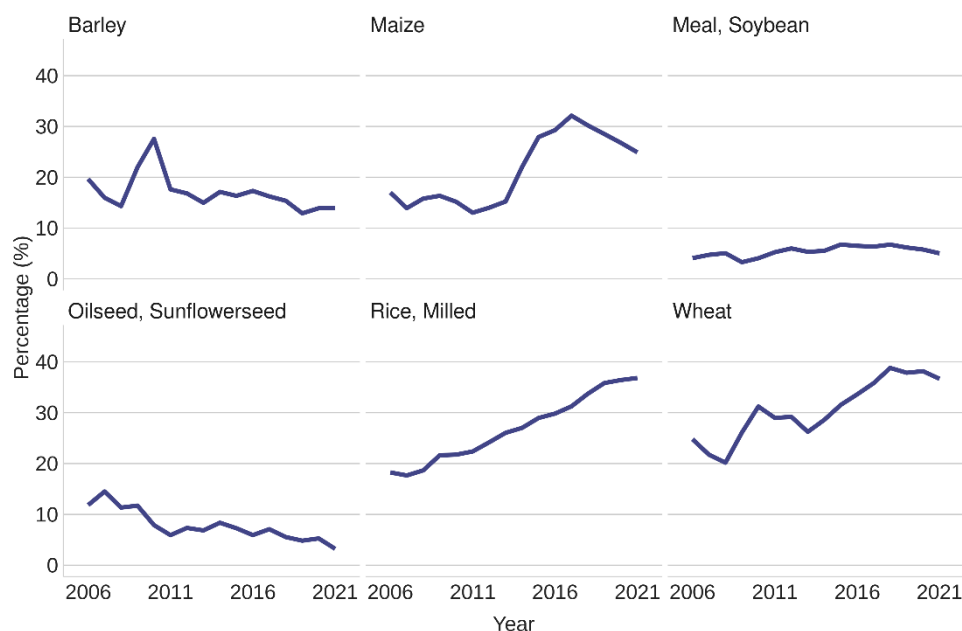
Data and Assessment

Indicator: Global stock to consumption ratios

Source: USDA

²² Defra, 'Food Statistics in your pocket: Global and UK supply', <https://www.gov.uk/government/statistics/food-statistics-pocketbook/food-statistics-in-your-pocket-global-and-uk-supply>.

Figure 1.1.4a: Stocks to consumption ratio: barley, soybean, rice, maize, sunflower seed, wheat April 2006-April 2021



Since 2016, there has been a significant increase in stock of wheat, peaking in 2019 at 57.9%. This fell sharply in 2020 to 30.9% and fell again in 2021 to 27.4%, remaining, however, above the 2016 stock level of 20.3%. A similar pattern can be seen in milled rice, although that showed a sharp rebound in 2021, rising by 17.3% to 33.6%. Maize also follows a similar pattern as it has risen by 18.2% to 34.6%. There has been a sharp rebound in the stock to consumption ratio, rising by 22.5% from 12.2%.

Trends

Most stock to consumption ratios are either at or below the early 2010 levels, with rice and wheat having experienced some peaks in the years since then. Given that the record global harvest in 2008 to 2009 drastically increased stock levels at the time, slight drops in the ratio for commodities such as barley, soybean, and sunflower seeds are not of concern currently. Overall, stock to consumption ratios are at a comfortable level for most commodities, with the FAO expressing some concern for soybeans.

Overall, the stock to consumption ratio for soybean remains low compared to the past two decades, which implies that harvest failures could quickly lead to market shortages. Such a scenario could have impacts on UK farmers and their costs where soybean is used for animal feed, as almost all requirements are met

through imports. Although substitutes are available, soybeans remain one of most effective animal feeds.²³

Indicator 1.1.5 Global livestock and dairy production

Headline

Global meat production has grown significantly since 2010 and is projected to increase over the coming years. Consumption increases are likely to vary, with high-income countries potentially having reached peak meat consumption per capita, and lower and middle-income countries expected to see more increases in consumption rates. Milk production is also set to continue to increase, mainly driven by improvements in efficiency rather than increases in herd size. Animal disease outbreaks in the late 2010s have substantially reduced pig herd numbers, particularly in China.

Context and Rationale

Meat makes up an important source of nutrition for many people. Global demand for meat has grown over the last 50 years, leading to a trebling of meat production over that period. In that same time span, there has also been a geographical switch in the leading meat production sites. Asia now accounts for 40% to 45% of total global meat production, having overtaken Europe and North America as the dominant producers.

While pig meat is the most popular source of meat at the global level, the production percentage of poultry meat has seen the highest increases in the last 50 years compared to other types of meat. In the UK, poultry meat is the most popular type of meat, followed by pork and then beef.²⁴

The UK is not exposed to a significant degree to changes in global availability of milk and dairy products due to a high supply-to-demand ratio for milk and only some reliance on cheese imports from the EU.

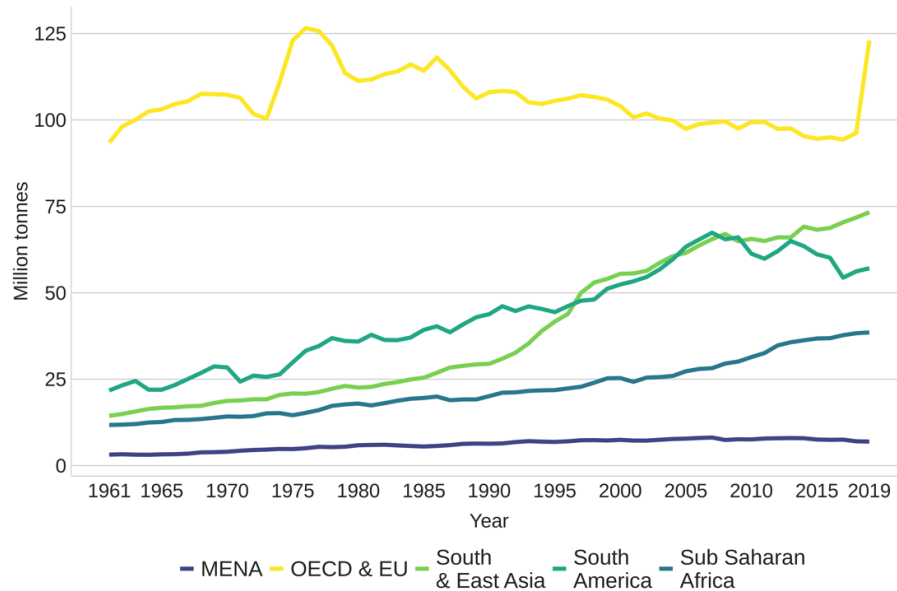
²³ FAO, 'OECD-FAO Agricultural Outlook 2021-2030', <https://www.fao.org/publications/oecd-fao-agricultural-outlook/2021-2030/en/>.

²⁴ Our World in Data, 'Meat and Dairy Production', <https://ourworldindata.org/meat-production>.

Data and Assessment

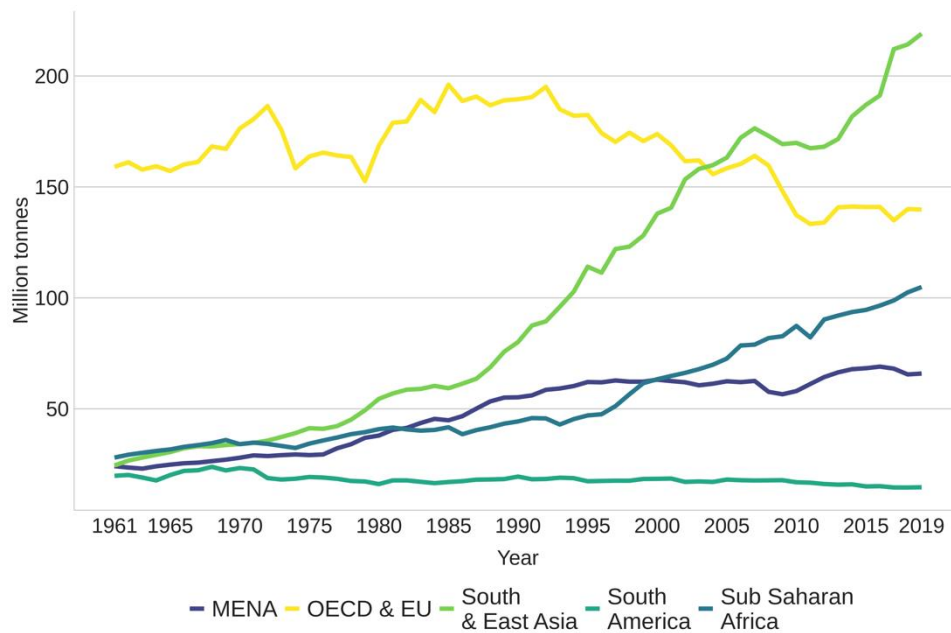
Indicator: Meat production by region; global dairy production. **Source:** FAO

Figure 1.1.5a: Million tonnes of meat by region, beef 1961-2019



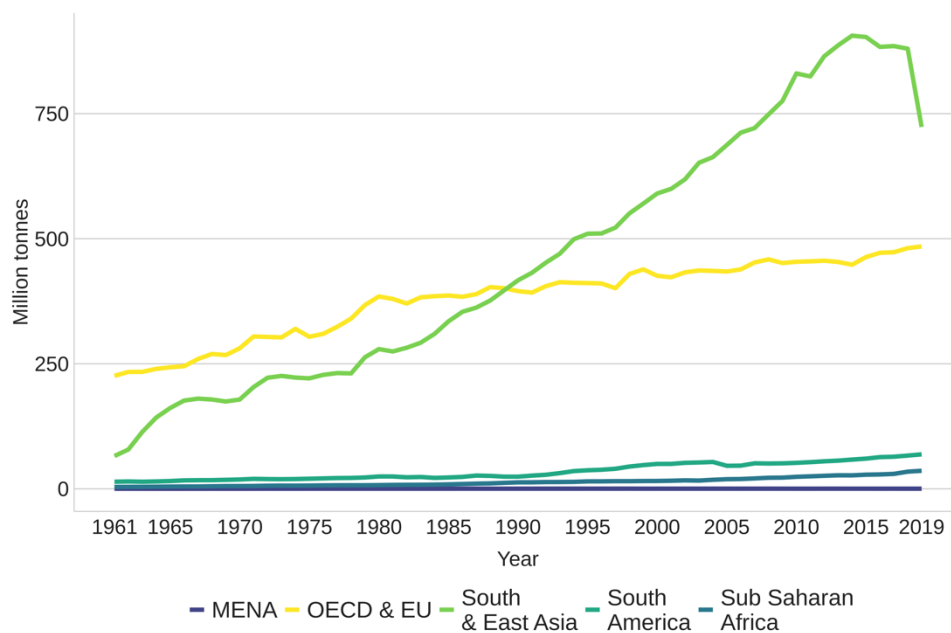
Beef production has shown growth in Sub-Saharan Africa at 22.8%, as well as in South and East Asia at 11.8%. OECD and EU countries also show a large growth in beef production, but that is due to a sharp spike in 2020 caused by a change in the way beef production is recorded. Otherwise, there has been a gradual decline between 2010 and 2019. Beef production between 2010 and 2020 fell in South America by -6.9% and the Middle East and North Africa by -8.4%.

Figure 1.1.5b: Million tonnes of meat by region, lamb 1961-2019



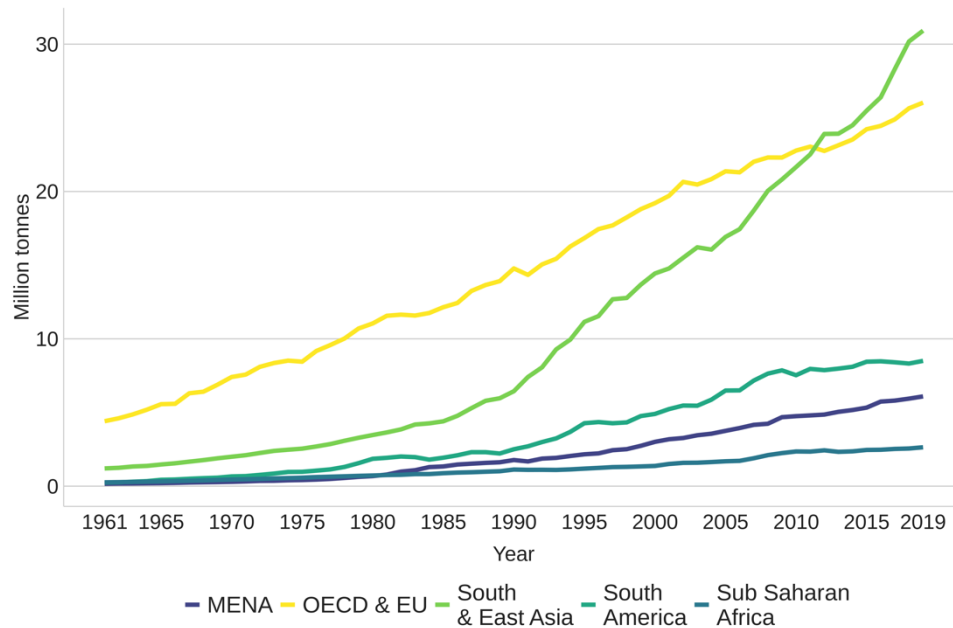
Lamb production has risen in the Middle East and North Africa by 13.6%, in Sub-Saharan Africa by 20.1%, and in South and East Asia by 29%. The dramatic rise in South and East Asia is driven by the rapid expansion of sheep farming in China. Sheep production in OECD and EU countries has grown slightly by 1.9% and fallen in South America by 13.4%. South America, it should be noted, has never been a large producer of sheep, which means that the drop in production will not be of meaningful significance.

Figure 1.1.5c: Million tonnes of meat by region, pig meat 1961-2019



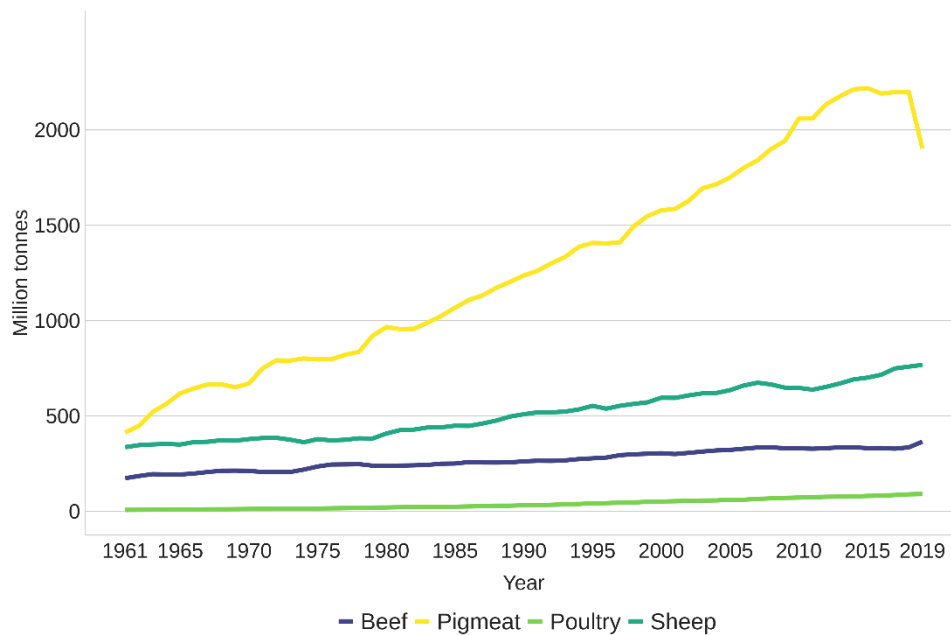
Pig meat production has risen in OECD and EU countries by 6.8%, in South America by 32.7%, and in Sub-Saharan Africa by 50.4%. In South and East Asia there was a sharp drop in production in 2019 by 12.9% due to the spread of African Swine Fever into China and South East Asia. The impacts of African Swine Fever on the global pig production are covered in more detail in the case study on African Swine Fever below. The Middle East and North Africa also fell by 4.4%, but the region is not a major producer of pigs.

Figure 1.1.5d: Million tonnes of meat by region, poultry 1961-2019



All regions have shown a rise in poultry meat production. The largest producer was South and East Asia, which also had the largest percentage rise in production at 42.7%. The next biggest producers were OECD and EU countries, which had a 14.3% rise between 2010 and 2019. The percentage rises of the other regions are 28.2% for the Middle East and North Africa, 12.9% for South America, and 12.0% for Sub-Saharan Africa.

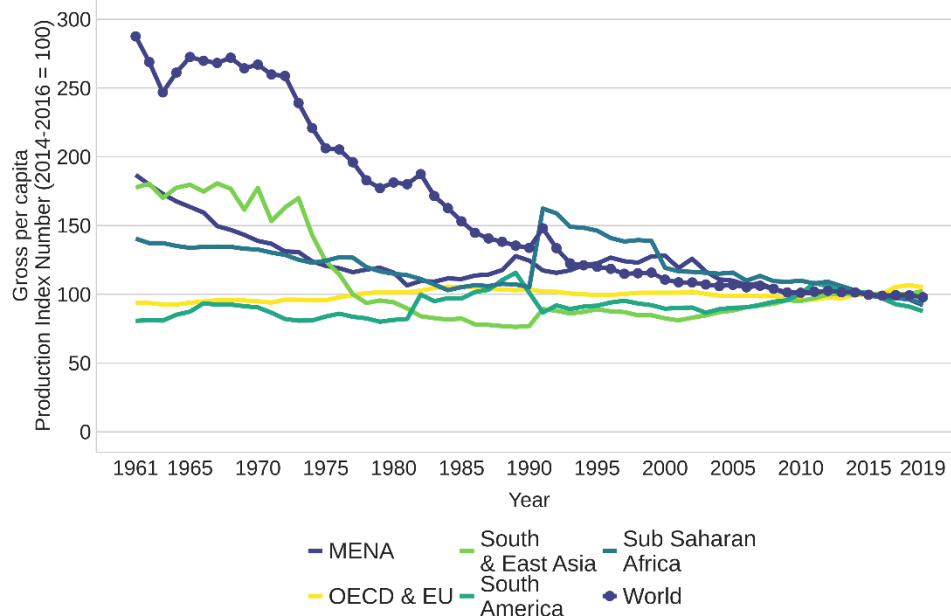
Figure 1.1.5e: Meat production tonnes global 1961-2019



Pigmeat has highest production of any meat global by a significant margin despite recent loss of production due to African Swine Fever.

Figure 1.1.5f: Milk produced per capita by region 1961-2019

(See appendix for an explanation of index numbers.)



Milk production per capita has consistently risen since 2000 in all regions until 2015. Between 2010 and 2019, milk production in South America has fallen 6.45% to 91.1. Production in the Middle East and North Africa has fallen by 9.9% to 92.2, and Sub-Saharan Africa has fallen by 15% to 93.5. There has been a rise in

OECD countries by 9.7% to 105.1 as well as in South and East Asia by 4.4% to 100.4.

Trends

While COVID-19 impacted global meat production temporarily due to logistical hurdles, reduced food services and household spend, the FAO expects global meat production to increase by 13% over the next ten years, due to increases in the number of animals and higher output per animal.

Poultry meat is projected to make up more than half of the growth in meat production levels in the next decade, with China, Brazil, and the US accounting for large parts of this growth. Following behind poultry, increases in pig meat production levels will make up a third of total meat production growth. Large parts of this increase are expected to come from the production recovery in Asian countries by 2023, particularly China and Vietnam, from African Swine Fever. Beef and sheep meat production is expected to increase the least, contributing 9% and 6% respectively to overall growth.

With global consumption patterns moving towards including more meat in diets, there is also an expected increase in the quantities of crops being used as feed. The current 1.7 billion tonnes of cereals, protein meals, and processing by-products used between 2018 and 2020 for animal feed are forecast by the FAO to increase to two billion tonnes by 2030. Overall growth rate in future is likely to be slower than in the last ten years. This reflects efforts by large meat producers to lower the protein meal share in feed. There are also some climate risks associated with the projected amount of animal feed to be produced by 2030. Maize yields, which is one of the most important commodities used as feed, alongside protein meal, are particularly vulnerable to volatility in terms of supply, price, and extreme weather events.

High-income countries already have the highest meat consumption levels. The FAO expects changes in those consumption levels to be low over the coming ten years, with some regions, such as the US and the European Union, having likely reached the saturation point in their meat consumption levels. Moreover, due to health and environmental concerns, consumers are expected to increasingly replace red meat with poultry meat and dairy products. Meat consumption increases are projected to mainly take place in developing regions due to high population levels and growth rates. Especially Africa and Asia are expected to have high growth rates in the coming years.

Risk: Impact of animal disease on meat production

Animal diseases carry a potential threat to the supply of meat and livestock related foods. Several animal diseases result in either the animal's death as a direct result of the disease, or the animal being culled for the purpose of disease control. Moreover, animal diseases carry additional risks in terms of zoonotic diseases which have the potential to transmit to the human population. There is also the risk that animal disease outbreaks could have a negative impact on consumer confidence in animal-sourced foods.

While disease outbreaks can have a marked impact on the animal population of individual countries, the UK has not experienced significant impacts on its meat supply in recent years.

Source: FAO, OIE

Figure 1.1.5g: Percentage of disease related deaths in livestock population: World 2005-2019

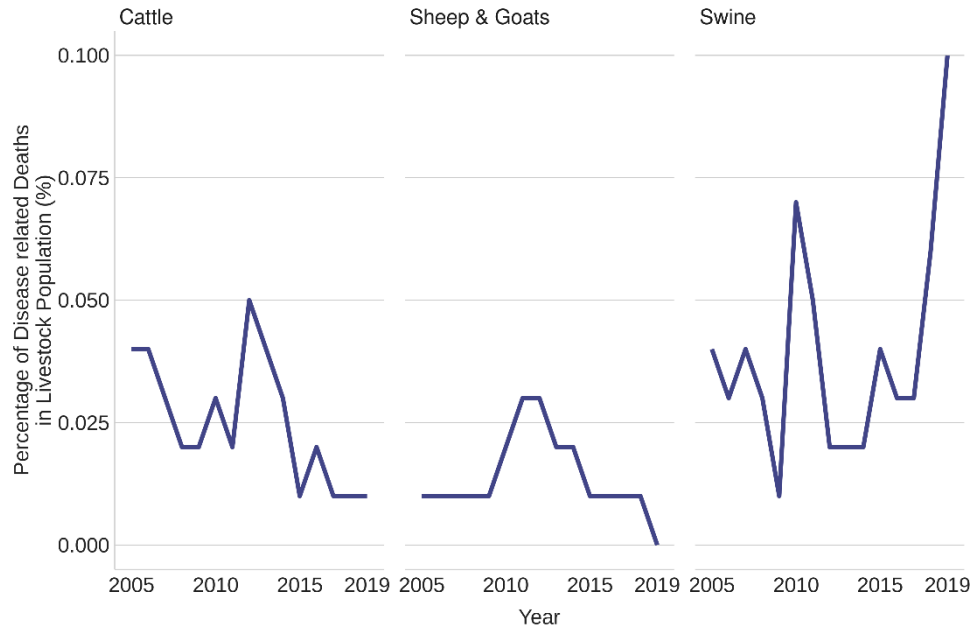


Figure 1.1.5h: Disease Deaths as a percentage of animal population: World 2005-2019

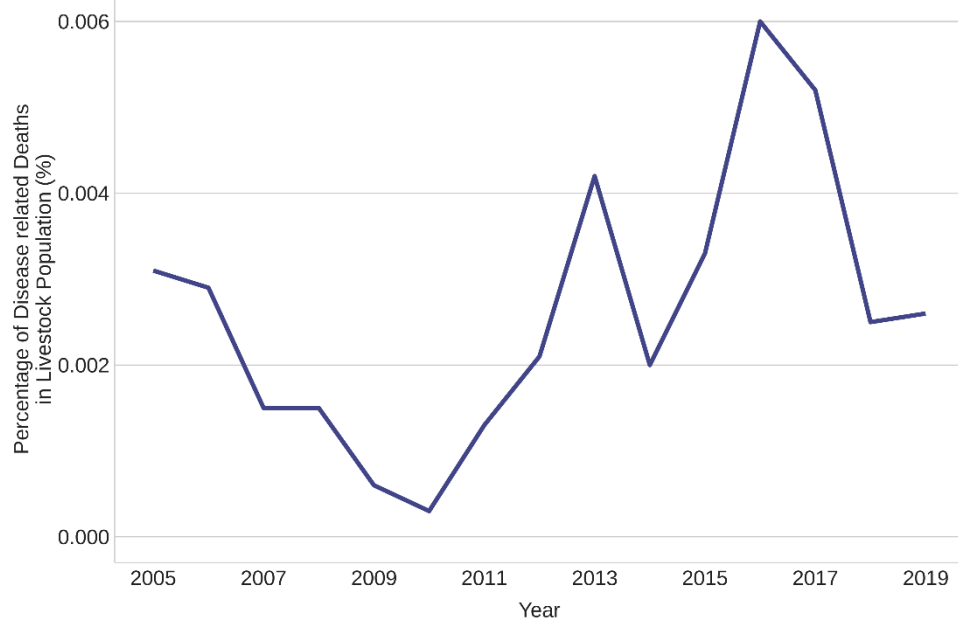


Figure 1.1.5i: Disease Deaths as a percentage of animal population: EU 2005-2019

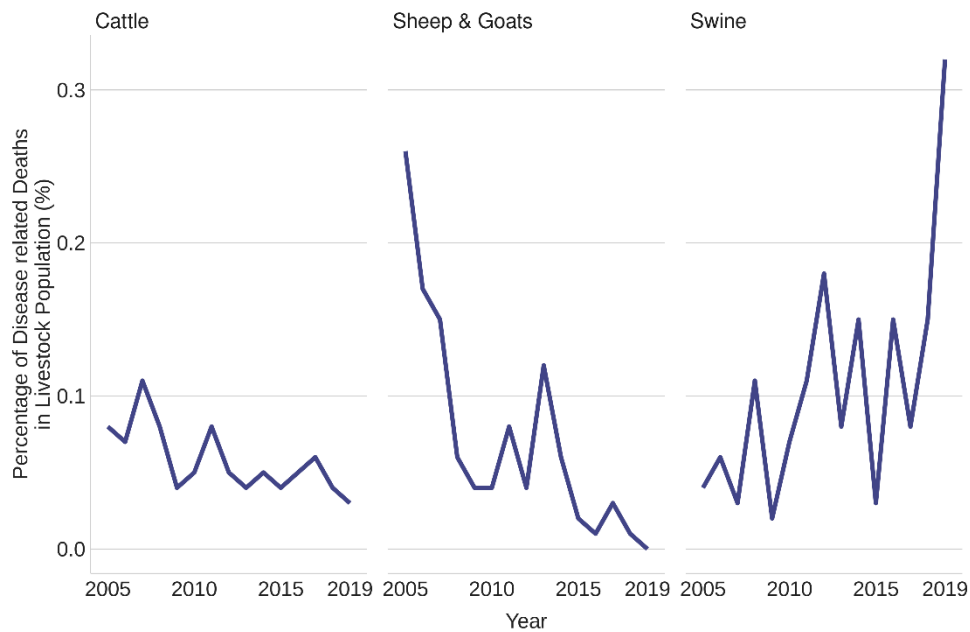
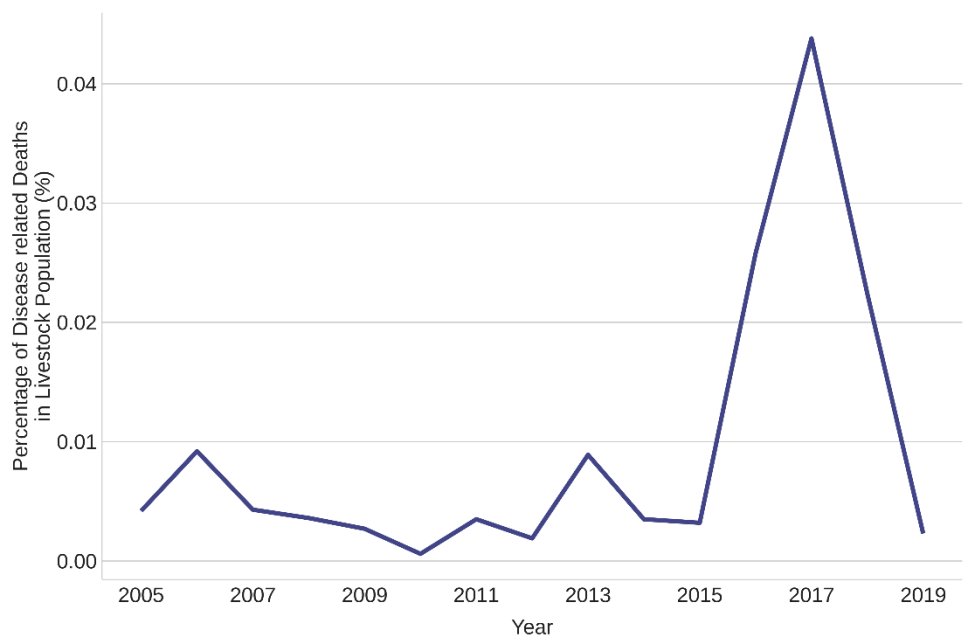


Figure 1.1.5j: Disease Deaths as a percentage of animal population: EU 2015-2019



Some of the notable animal disease outbreaks in recent years outlined in figures 1.1.5 g to j include the Avian Influenza outbreak in 2016 to 2017 in the EU and UK, which led to the culling of many birds across Europe. Most recently, the UK had to declare to the World Organisation for Animal Health (OIE) in November 2020 that the UK was no longer free from notifiable Avian Influenza following an outbreak of H5N8, highly pathogenic Avian Influenza. The Chief Veterinary Officers for England, Scotland, and Wales also agreed to impose a housing order

for all birdkeepers in Great Britain from December 2020 to March 2021. Risk to public health was assessed to be low by Public Health England.²⁵

The peak in pig deaths in Europe in 2011 was due to a Classical Swine Fever outbreak in Russia and the Baltic States as well as an outbreak of Aujeszky's Disease. The African Swine Fever outbreak in China in 2018 had large impacts on China's domestic meat production and is discussed in more detail in the case study on African Swine Fever. The steep rise in pig deaths after 2017 is due the incursion of African Swine Fever into Eastern Europe. An outbreak of brucella melitensis in North Macedonia contributed to the particularly high mortality in sheep and goats before 2008 in Europe.

Pests, pathogens, and invasive non-native species (INNS) pose a significant threat to agriculture. Estimates of the economic costs of INNS are in the region of £1.3 billion per year in England.²⁶ Climate Change will likely increase these costs. For example, Bluetongue virus outbreaks in livestock may happen every year in the UK by 2070 due to milder winters.²⁷

Case Study 1.2 African Swine Fever

Overview

African swine fever (ASF) is a viral disease that can be spread by live or dead pigs as well as pork products. It is not, however, a risk to human health. China has seen one of the largest ASF outbreaks, which started in 2018 and has led to 1.2 million pigs having to be culled since then. With China needing to fill domestic production shortfalls via imports, global exports to China grew drastically and led to an increase in global pig prices. This effect has started to reverse, with China restocking its pig herds, having a knock-on effect on global prices again. The UK is currently ASF-free. However, due to the geographic proximity of ASF cases in Eastern Europe and some EU countries, the risk has been at medium level since 2018 due to the possibility of the disease being imported via pork products.

²⁵ Defra, 'Avian influenza (bird flu) in Europe, Russia and in the UK', <https://www.gov.uk/government/publications/avian-influenza-bird-flu-in-europe>.

²⁶ Environment Agency, '2021 river basin management plans: Invasive non-native species challenge' (2019), https://consult.environment-agency.gov.uk/++preview++/environment-and-business/challenges-and-choices/user_uploads/inns-challenge-rbmp-2021-1.pdf.

²⁷ UK Climate Risk Independent Assessment, 'Technical Report: Chapter 3: Natural Environment and Assets', [REDACTED] 160.

Background

African swine fever (ASF) is a highly contagious haemorrhagic viral disease of domestic and wild pigs, which is responsible for serious economic and production losses. This transboundary animal disease can be spread by live or dead pigs, domestic or wild/feral pigs, and pork products. ASF can survive for months to years in smoked, dried, cured, and frozen meat from affected pigs or wild boar. Transmission can also occur via contaminated feed and fomites (non-living objects) such as shoes, clothes, vehicles, knives, equipment, and others, due to the high environmental resistance of the ASF virus. ASF is, however, not a risk to human health

Currently there is no approved vaccine for ASF. Prevention in countries free of the disease depends on implementation of appropriate import policies and biosecurity measures, ensuring that neither infected live pigs nor pork products are introduced into areas free of ASF. As observed in Europe and in some regions of Asia, the transmission of ASF seems to depend largely on the wild boar population density and wild boars' interaction with low-biosecurity pig production systems.

Discussion

The most notable outbreak of ASF in recent years started in China in 2018. Since then, the disease has spread across many South East Asian countries, including Mongolia, Vietnam, the Philippines, India, and others. Based on FAO reports, more than 1.2 million pigs had to be culled between 2018 and 2021 in China alone. Outside of Asia and Oceania, there are also ongoing cases of ASF in wild boars and domestic pigs in Eastern Europe as well as Belgium and Germany.

The risk level to the UK was raised to medium in August 2018 and has remained at that level to-date as a result of the number of outbreaks of ASF being reported in Eastern Europe, and subsequent detection of ASF in wild boar in Belgium in September 2018. Although case numbers were higher in Asia and Oceania, the geographical distance to those outbreak sites meant that these outbreaks did not add to the risk level in the UK.

Illegal importation of infected pork meat from affected parts of Asia and Oceania, however, presents a significant route of entry of ASF virus into the UK. While it is legal to import pork products from unaffected areas of the EU, personal imports from affected countries also poses a risk as the subsequent food waste could be discarded in areas where wild boar, feral pigs, or domestic pigs could access it. Some of the risks of passengers bringing back pork products to the UK from affected countries was reduced when COVID-19 movement restrictions were in place.

At the time of publication, no ASF cases have been detected in the UK. To prevent an outbreak of ASF in the UK, the UK government has raised awareness of ASF amongst travellers via various information campaigns. In addition, the government has worked with the pig sector to ensure all the relevant biosecurity measures are being followed.

ASF occurred in the Chinese pig sector in 2018 and has had significant impact on its ability to supply China's domestic market. The volume of pigs exported to China from third countries, including the UK, increased dramatically over the period between 2018 and 2020. This increased pig prices generally.

Indicator 1.1.6 Global fish stocks

Headline

Despite some regional improvements in sustainable fishing, the over-exploitation of world fishery stocks remains a major issue. These unsustainable practices will have significant impacts on the medium- to long- term global fishing stock availability.

Context and Rationale

Over the last few decades, overall fish consumption at the global level has seen a steady increase. While the nutritional composition of fish varies between species, fish constitutes a valuable source of protein, accounting for about 17% of total animal protein consumed globally in 2017.²⁸ Production has increased thanks to technological improvements in the way fish is caught, processed, stored, and distributed. Demand for fish has also increased in correlation with rising incomes and awareness amongst consumers of its health benefits.

International markets and aquaculture have had significant impacts on the availability and consumption of fish. They have reduced the importance of geographical location, broadened the markets for many species, and offered wider choices to consumers, often at cheaper prices.

Threats to fish production include over-exploitation of fish stocks, water pollution, and climate change. Rising water temperatures and acidification impact marine

²⁸ FAO, 'The State of World Fisheries and Aquaculture 2020',

biodiversity and affect both the productivity and the distribution of marine fish stocks.

Data and Assessment

Indicator: Share of marine fish stocks under or moderately exploited

Source: UN Sustainable Development Goal 14, 2020

Figure 1.1.6a: Percentage of fish stocks within biologically sustainable levels, Atlantic Ocean, 2004 to 2017

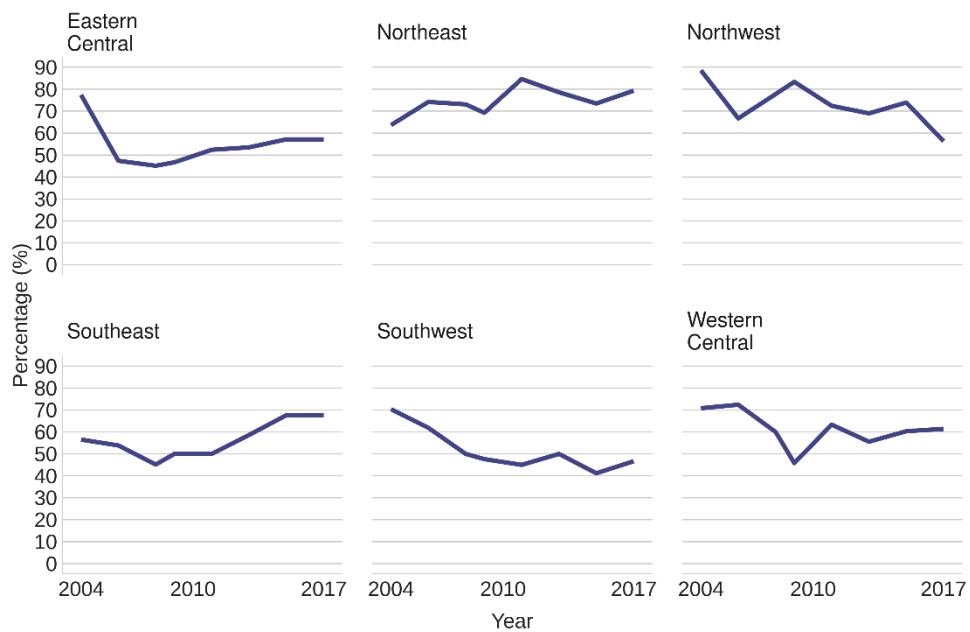


Figure 1.1.6b: Proportion of fish stocks within biologically sustainable levels, Indian Ocean, 2004 and 2017, percentage

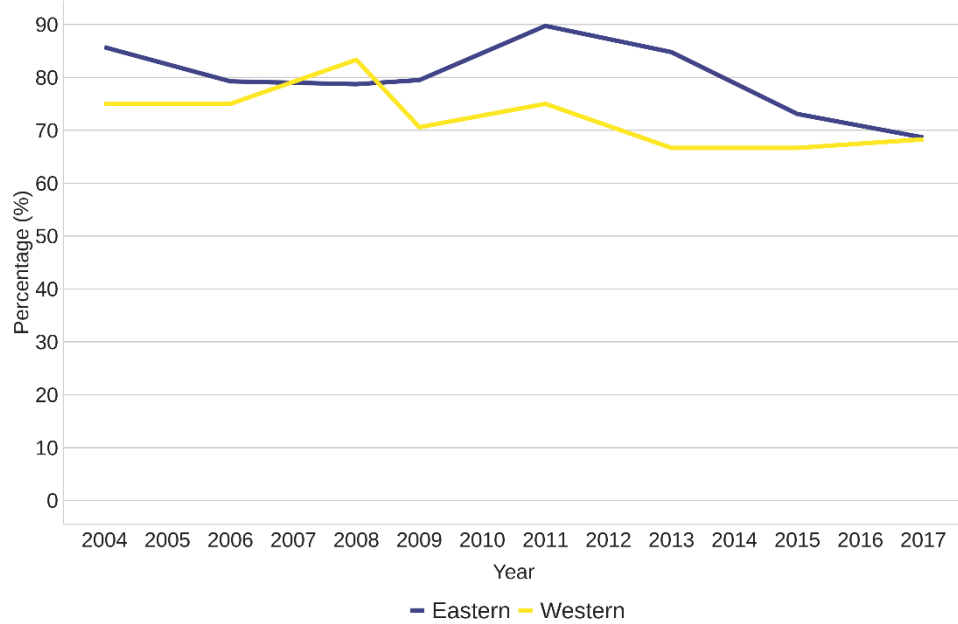


Figure 1.1.6c: Proportion of fish stocks within biologically sustainable levels, Mediterranean and Black Sea, 2004 to 2017, percentage

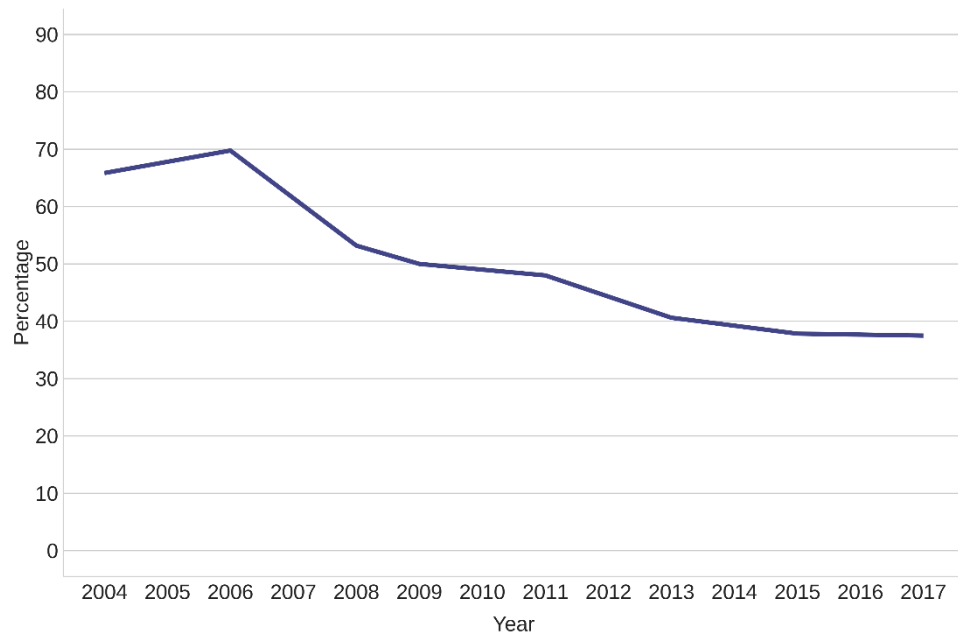


Figure 1.1.6d: Proportion of fish stocks within biologically sustainable levels, Pacific Ocean, 2004 to 2017, percentage

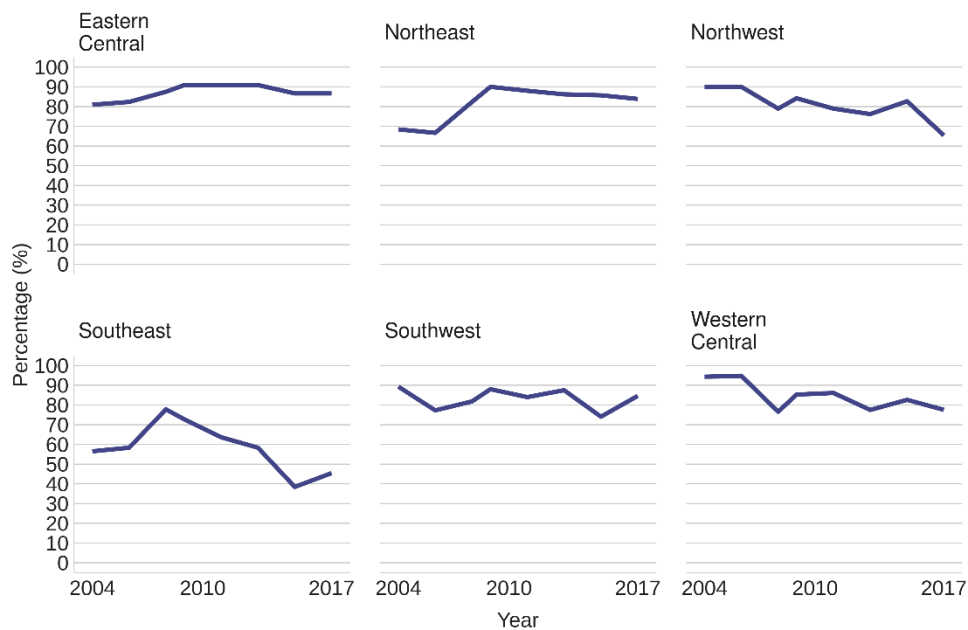
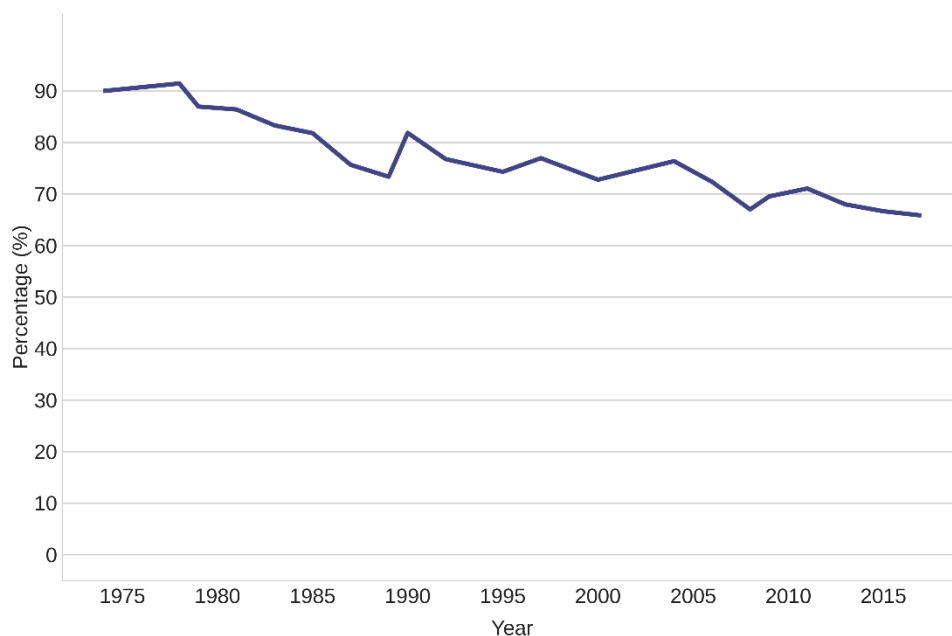


Figure 1.1.6e: Percentage of global fish stocks within biologically sustainable levels, 1974-2017



In 2013, 68% of global fish stocks were within biologically sustainable levels. This fell to 66.7% in 2015, and 65.9% in 2017 as seen in figure 1.1.6e. Between 2015 and 2017, the share of stocks fished sustainably fell at a slower rate than for the period between 2013 to 2015. Improved regulations on fishing, along with monitoring and surveillance, have proved effective in some regions. Uptake of

these measures remains slow, however, particularly in developing countries, and remains a medium-term risk of collapse in stocks. Therefore, the level of sustainable fisheries varies significantly by region.

Between 2011 and 2017 there were reductions in the share of stocks fished sustainably in some regions, with large declines in the Eastern Indian Ocean of 21.1%, Pacific Southeast 18.2%, Pacific Northwest 13.6% and Northwest Atlantic 16.2%. Improvement was noted in the South-western Pacific at 0.6% - it rose 9.9% between 2015 and 2017; and in the South-eastern Atlantic of 17.7%, South-western Atlantic 1.67% and Eastern Central Atlantic 4.8%

As of 2017, marine fishing regions with the lowest share of stocks fished sustainably were the South-western Atlantic at 46.7%, South-eastern Pacific at 45.5%, and Mediterranean and Black Sea at 37.5%.

Trends

Despite regional improvements in sustainable fishing practices, the over-exploitation of world fishery stocks remains a major concern for this indicator. Over-exploitation not only creates negative ecological consequences, but also reduces fish production in the long-term. The FAO estimates that 33.1% of fish stocks were being fished at biologically unsustainable levels in 2015. These levels can differ greatly between individual fish species. The UN's Sustainable Development Goal 14.4 aims to restore fish stocks in the shortest time possible. While the trend of overfished stocks is still moving upwards, some regions, such as the US and Australia, have managed to increase the proportion of stocks fished within biologically sustainable levels.

The FAO's ten-year outlook foresees that global fish production will continue to grow, albeit more slowly than in the last ten years. This future growth in fish production will mainly stem from increased aquaculture production. Intensification, expansion into new spaces, and innovative technologies for land-based and offshore farms are expected to be the main drivers of growth. However, many factors have the potential to limit this growth, such as reduced availability of land and water, disease outbreaks, feed, and genetic resources.

Most of this growth is expected to occur in Asia, which is set to become the main producing region by 2030, with 88% of global aquaculture production and 71% of global fish production. America, Europe, and Oceania are all expected to experience growth rates under 1% per annum by 2030. These lower growth rates

reflect modest growth in capture fisheries production and the lower contribution of aquaculture to total fish production in these continents.²⁹

The UK is a net importer of seafood, with key species purchased at retail and out of home satisfied by imports, alongside domestic production in the case of salmon. Key species for out of home seafood consumption include cod, tuna and salmon, and prawns. In 2019, based on imported value, the top 5 imported species, accounting for around 70% of imports, were salmon, prawns (warm water and cold water), cod, tuna, and haddock.

Imported salmon and warm water prawns mainly stem from aquaculture, and their sustainability is therefore not assessed in this indicator as its focus lies on wild caught fish and seafood. Most cold-water prawns sold in the UK come from wild capture fisheries in the North Atlantic, and future supply is likely to remain stable. Most imports of cod are caught in the Atlantic, with fishing assessed by the Sea Fish Industry Authority, a UK public body, to be below maximum sustainable yield and stock biomass at full reproductive capacity. Tuna imports mainly come from the Pacific and Indian Ocean. While there are some concerns over illegal, unregulated, and unreported fishing for continued sustainability, overfishing for tuna from the Indian Ocean is assessed to be a low risk by the FAO's Indian Ocean Tuna Commission. Haddock imports largely come from the Arctic, which is not covered by the data in this indicator, and the North Atlantic. Fish stocks from both oceans is assessed to be in good condition.

Risk: Rising temperatures and ocean acidification

Projections of a 1 to 2-degree Celsius increase over a 40-year period in ocean temperatures, alongside reductions in oxygen content, foresee a decline in body size for several globally important fish species. Algal blooms, which can become toxic to fish, and an increased risk of disease outbreak, pose a further threat both to the fishing and aquaculture industry. Higher ocean temperatures also produce shifts in the distribution of aquatic species so that species can keep to their thermal or related ecological preferences. Recent evidence reviewed by the FAO indicates that poleward expansion will result in a net local increase in species richness in most places, except in tropical regions, where strong decreases in richness are expected.³⁰

²⁹ FAO, 'OECD-FAO Agricultural Outlook 2021-2030', [REDACTED]

³⁰ UK Climate Risk Independent Assessment, 'Technical Report: Chapter 7: Natural Environment and Assets', [REDACTED] FAO, 'The State of World Fisheries and Aquaculture 2016', [REDACTED]

Ocean acidification is also a risk to fish and shellfish production. Ocean acidification occurs when the pH level of the ocean is reduced. Due to the rising carbon dioxide levels in the atmosphere, more carbon dioxide is being sequestered in the oceans, leading to a more acidic pH level. Acidification particularly affects shellfish, such as oysters and clams, in that it makes building and maintaining shells more difficult. It also impacts other species vital to the marine ecosystem, such as reef-building corals that provide a habitat to some fish species.

Indicator 1.1.7 Global land use change

Headlines

Although the changes in global land use have been minimal over the last decade, even small changes in the way land is used can have significant impacts on biodiversity levels and ecosystems. Any losses in these areas could lead to negative consequences for global agricultural production.

Context and Rationale

Global agricultural production can not only be increased by improved yields (as outlined in indicator 1.1.2), but also by converting more land to farmland. Over the last twenty years, however, there has been very little change globally in the share between agricultural, forest, and other land. Given that total agricultural production has been increasing over the same period, this indicates that food is being produced more efficiently, requiring less land resources.

Land use has become one of the central environmental concerns. Agricultural production, while fundamental for human well-being, also has significant impacts on biodiversity, ecosystems, and climate change. The challenges of reversing biodiversity declines, preventing further outbreaks of zoonotic diseases, and mitigating climate change, while producing sufficient food to ensure zero hunger, must be resolved together.

Biodiversity plays a vital role in food production. For instance, more than 75% of the leading types of global food crops rely to some extent on animal pollination for yields and / or quality. Therefore, making land use systems sustainable is central to securing continued global food availability.

Data and Assessment

Indicator: Global land use change

Source: FAO

Figure 1.1.7a: Agricultural land-use change 1961-2019

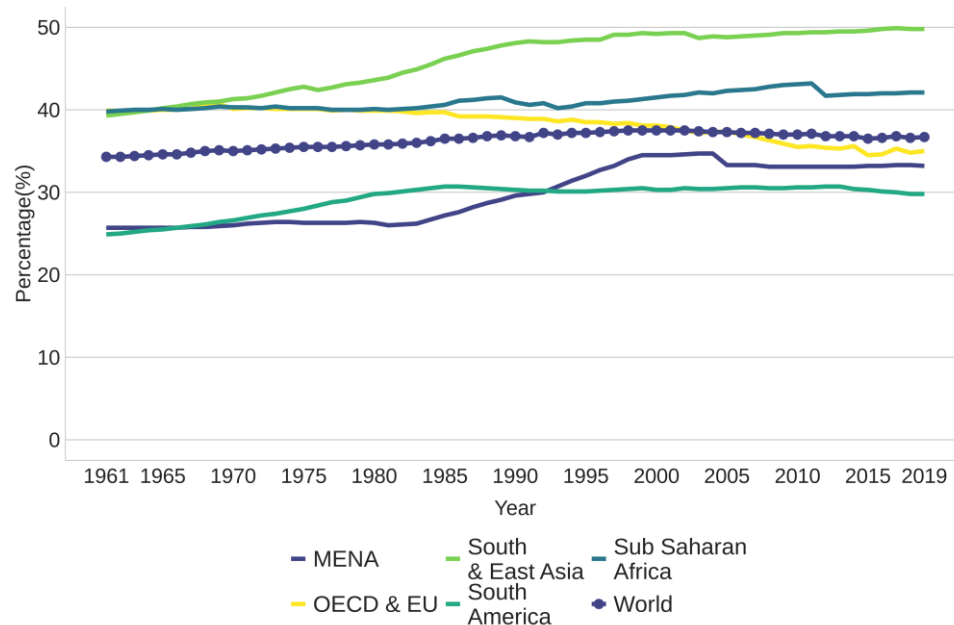


Figure 1.1.7b: Crop land-use change 1961-2019

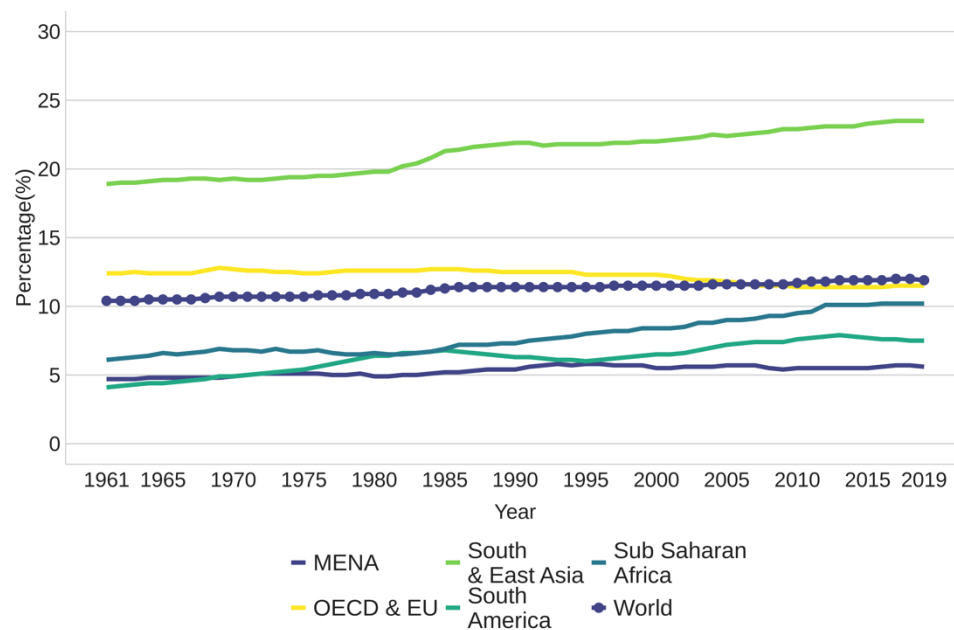


Figure 1.1.7c: Land used for pasture change 2002-2019

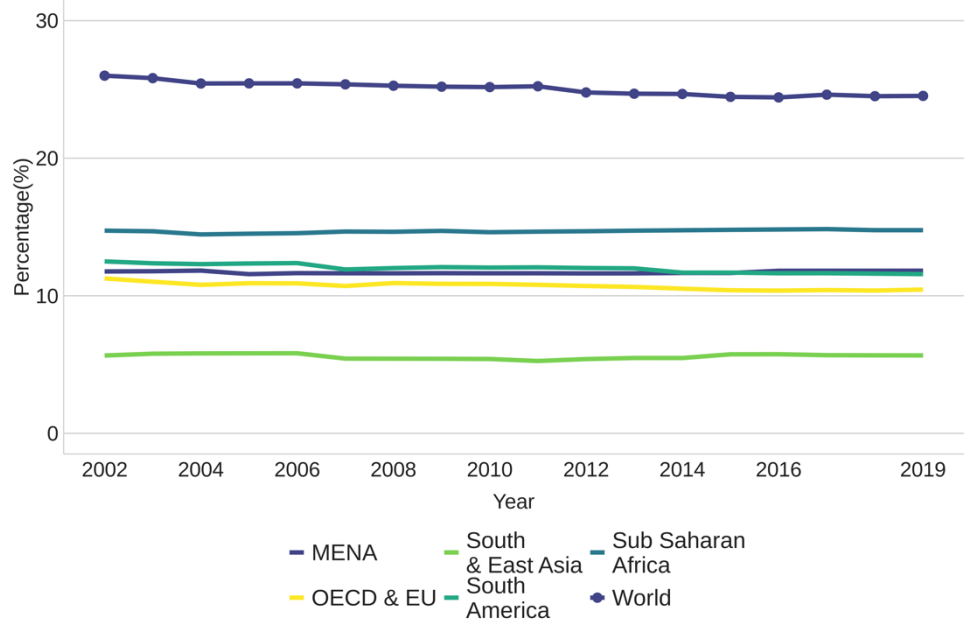
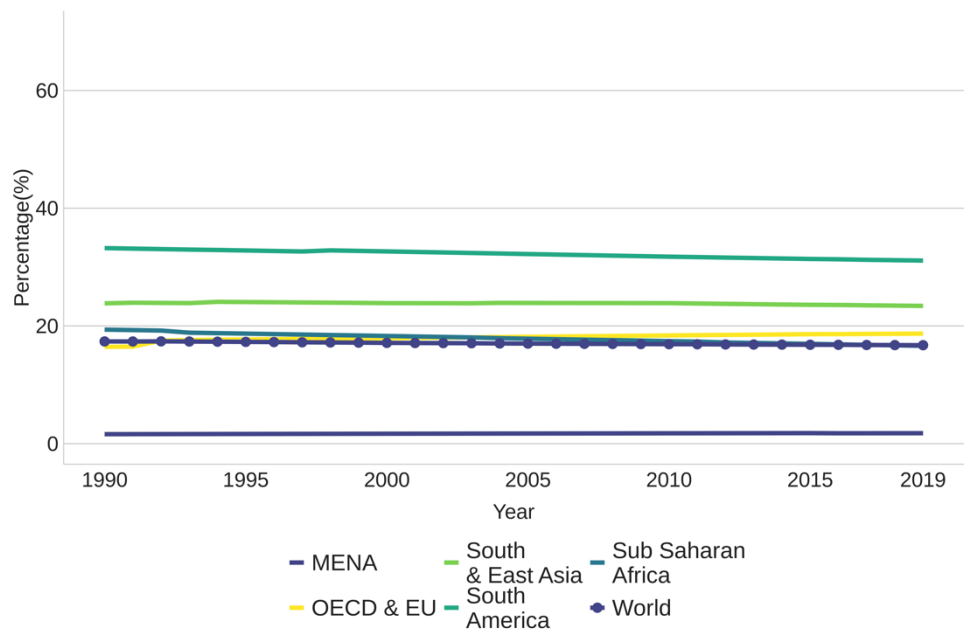


Figure 1.1.7d: Forestland-use change 1990-2019



The amount of global agricultural land has remained relatively constant, with relevantly little decline in forest and permanent pastures over the last couple of decades. There has been an increase in cropland and land under irrigation in this period. However, the majority of the increase in food production is down to increased yields rather than increased land area used for agricultural production.

In OECD and EU countries, there has been a marked decline in the amount of land used for agriculture from 39.9% in 1961 to 35% in 2019. Since 2010, the percentage for the Middle East and North Africa has risen by 0.1% to 33.2%, in Sub-Saharan Africa it has fallen by 1% to 42.1%, in South and East Asia it has risen by 0.5% to 49.8%, and in South America it has fallen by 0.8% to 29.8%. The change in South America is the most significant change in agricultural land use since 2010.

In OECD and EU countries, cropland has fallen by 1% since 1961 to 11.4% in 2019, and risen by 0.1% since 2010. Since 2010, the percentage for Sub-Saharan Africa has risen by 0.7% to 10.2%, in South and East Asia it has risen by 0.6% to 23.5%, in South America it has decreased by 0.1% to 7.5%, and in the Middle East and North Africa it has risen by 0.1% to 5.6%. The increase in the Sub-Saharan Africa is the most significant change in cropland use since 2010.

In OECD and EU countries, pastureland has fallen by 0.4% since 2010 to 12% 2019. Since 2010, the percentage for the Middle East and North Africa has risen 0.1% to 15.3%, in Sub-Saharan Africa it has fallen by 0.8% to 16.3%, in South and East Asia it has risen by 0.1% to 13.5%, and in South America it has fallen by 0.4% to 12%. The decrease in Sub Saharan Africa is the most significant change in pastureland use since 2010.

In OECD and EU countries, forestland has risen by 0.2% since 2010 to 32.7% 2019. Since 2010, the percentage for the Middle East and North Africa has risen 0.1% to 2.1%, in South and East Asia it has risen by 0.4% to 29.3%, in South America it has fallen by 1.3% to 48.2%. and in Sub-Saharan Africa it has fallen by 1.6% to 26.6%. The decreases in South America and Sub-Saharan Africa are the most significant changes in forestland use since 2010.

Trends

Although land use change has been relatively stable in the last few decades, there has still been an overall decline in forest land between 2000 and 2018 of 89 million ha, or expressed in percentages, a drop from 32.2% of forest land to 31.2%.³¹ While not indicated in the data, forest land is of ecological significance for a variety of reasons, including biodiversity. The Dasgupta review from 2021 points out how intrinsically linked human wellbeing is to nature's diversity, but acknowledges how difficult it is to measure the 'worth' of nature as a whole due to people's failure to understand some of the hidden benefits nature is providing to

³¹ FAO, 'World Food and Agriculture: Statistical Yearbook 2020' [REDACTED]

humanity. Therefore, even slight declines in forest land should be of concern due to the known and unknown consequences they will have for the world.

The FAO expects that agricultural land use will remain at current levels during the coming decade as an increase in cropland offsets a decrease in pastureland. Most regions will see a decline in overall agricultural land, except for Latin America, which will see the most substantial increase, followed by the Near East and North Africa with a minor growth in land use. Out of the Latin American countries, Brazil will see the highest increase in crop land, while at the same time, its forest land is projected to decrease by about 4%. This is likely linked to increased meat production in Brazil.

Expansion of cropland is projected to account for 6% of total growth in crop production over the next decade. Cropland expansion will continue to be less important for overall food production levels as the transition to more intensive production systems is foreseen to persist. The largest expansion of cropland is likely going to take place in Latin America, where profitable large-scale farms are expected to attract investments for cultivation of new land.

The largest decline in pastureland is projected for Asia and the Pacific region due to the expected substitution from ruminant to non-ruminant production. There is an expected switch to pig meat, following the recovery from African Swine Fever, and poultry, which require less pastureland.³²

Risk: Land degradation and biodiversity loss

Agricultural expansion is the most widespread form of land-use change. Currently, over one third of the terrestrial land surface is used for cropping or animal husbandry.³³

The UN Environment Programme lists land use change as the most important direct driver of land degradation and loss of biodiversity on land, as well as the most important driver impacting freshwaters.

Agricultural expansion through clearing or conversion of forest, shrub land, savannah, and grassland has been responsible for substantial CO₂ emissions,

³² FAO, 'OECD-FAO Agricultural Outlook 2021-2030', [REDACTED]

³³ IPBES, 'Summary for policymakers of the global assessment report on biodiversity and ecosystem [REDACTED]' page 12.

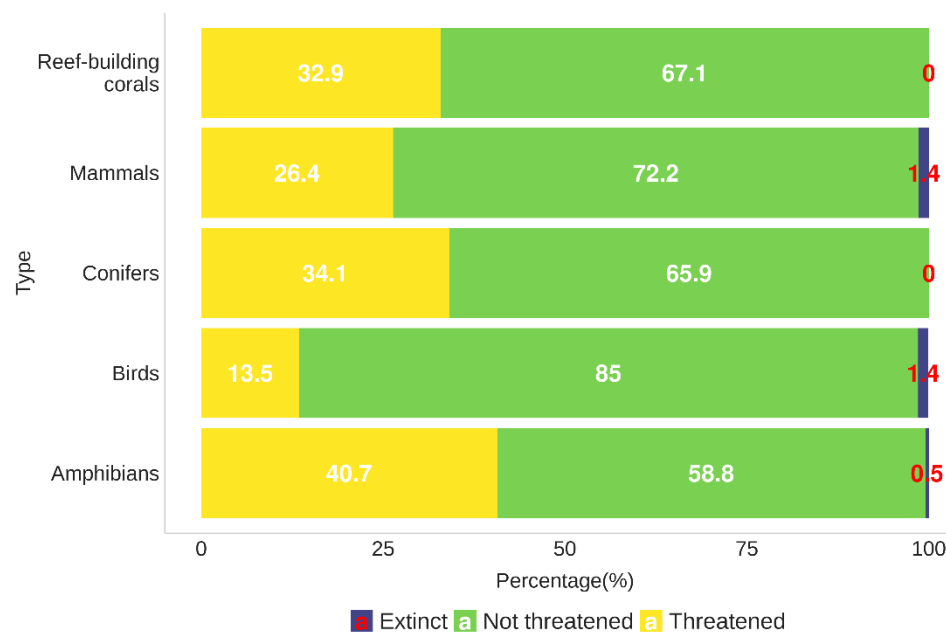
including from the loss of carbon sinks, and is associated with negative effects on biodiversity.

Agriculture relies on biodiversity for the provision of essential ‘ecosystem services’. These services are vital to human well-being and include crop pollination, water purification, flood protection, and carbon sequestration. Globally, these ‘services’ are worth an estimated \$125 to 140 trillion per year, more than one and a half times the size of the global GDP.³⁴

Different agricultural practices have both advantages and drawbacks. Less intensive forms of agriculture can promote biodiversity within the farming system but require more land for an equivalent food output. Conversely, more intensive forms of agriculture require greater inputs of energy, fertilisers, and feeds, but can provide significant yield benefits per unit of land. They are inherently biodiversity-poor, as increased use of fertilisers and pesticides, specialisation, and rationalisation can contribute to a loss of both semi-natural habitats and species abundance. As these agricultural practices require less land, however, they can contribute to habitat creation elsewhere.

Source: UN Sustainable Development Goal 15

Figure 1.1.7e: Best estimates of the proportions of species threatened with extinction in the Red List Index, by species group, 2021



³⁴ OECD, ‘Biodiversity: Finance and the Economic and Business Case for Action’ (2019),

The UN reports that human activities are causing biodiversity to decline faster than at any other time in human history. Countries participating in the UN Sustainable Development Goals have fallen short on their 2020 targets to halt biodiversity loss. The Red List Index of the International Union for Conservation of Nature, as shown in figure 1.1.7e, monitors the overall extinction risk for various species. The figure shows an overall % decline since 1993 of 10%. Among 134,400 species assessed, 28% (more than 37,400 species) are threatened with extinction, including 41% of amphibians, 34% of conifers, 33% of reef-building corals, 26% of mammals and 14% of birds. The main drivers of species loss are agricultural and urban development, unsustainable harvesting through hunting, fishing, trapping, and logging, and invasive alien species.³⁵

Indicator 1.1.8 Phosphate rock reserves

Headline

Phosphate rock is the only large-scale source of phosphorus, an essential element for plant growth and an important chemical fertiliser. The UK has no phosphate reserves and relies on imports; Exploitable reserves of phosphate rock have increased since 1995. At the same time, some regions, including the UK, have reduced their use of phosphate rock as a fertiliser while increasing agricultural production. Many countries are also in the process of making more efficient use of phosphate rock, which could reduce the demand for this type of fertiliser.

Context and Rationale

Phosphorus is an essential element for life, second only to nitrogen as the most limiting element for plant growth. Food production everywhere is dependent on the availability of phosphorus for plant uptake in an available form. Over the past century phosphate rock has been one of the main sources of phosphorus for agriculture but is limited to certain geological deposits, which makes this both a finite and important resource globally. It is conventionally added to the soil in preparation for plant uptake and can take many years to increase or decrease soil reserves. A deficiency of phosphate lowers crop yield and quality, a surplus of phosphate can lead to environmental pollution.

³⁵ UN, 'Sustainable Development Goal [REDACTED]

Phosphorus cannot be produced, unlike nitrogen or potassium, the two other main fertilisers. In addition, phosphate rock is a geologically finite resource and is also a geopolitical issue due to the location of phosphate rock deposits. The UK solely relies on imports of phosphate rock to meet its demands. It is desirable in the medium to long term to transition away from consuming finite resources and instead focus on more sustainable ways of providing phosphorus for the food chain, such as the increased use of manure. More details are provided on the sustainability aspect in a UK context in **Theme 2**.

Data and Assessment

Indicator: Phosphate rock reserves relative to production

Source: US Geological Survey ³⁶

Figure 1.1.8a: Phosphate Rock Production and reserves from US Geological Survey (USGS)

	Production			Reserve Base			Global share	
	1995	2019	Change	1995	2019	Change	Production	Reserves
	Mt	Mt	%	Mt	Mt	%	%	%
World	131	227	73	34,000	71,000	109		
USA	44	23	-48	4,400	1,000	-77	10.1	1.4
Algeria		1			2,200		0.4	3.1
Australia		3			1,100		1.3	1.5
Brazil	4	5		370	1,600		2.2	2.3
China	21	95	352	210	3,200	1424	41.9	4.5
Egypt		5			2,800		2.2	3.9
Finland		1			1,000		0.4	1.4
Israel	4	3		180	57		1.3	0.1
Jordan	5	9		570	800		4.0	1.1
Morocco / W Sahara	20	36	80	21,000	50,000	138	15.9	70.4
Russia	9	13	44	1,000	600	-40	5.7	0.8
S Africa	3	2		2,500	1,400		0.9	2.0
Saudi Arabia		7			1,400		3.1	2.0
Tunisia	7	4		270	100		1.8	0.1
R of W	14	20	43	3,500	3,743	7	8.8	5.3

³⁶ The US Geological Survey (USGS) defines global reserves as Reserves, referring to the world supply, which can be profitably extracted with present technology and prices, and Base Reserves, which is the total quantity of known phosphate rock deposits, regardless of whether it can be profitably extracted at present. However, there is no accepted worldwide system for classifying phosphate rock reserves and resources, so those summarised here should not be taken as definitive. Apart from the Reserves and Base Reserves distinction, data does not differentiate reserves according to cost-effectiveness of extraction. The higher the price of phosphate, the more economical it becomes to invest in extracting less accessible reserves.

Source: FAO, World fertiliser trends and outlook to 2022, (2019)

Figure 1.1.8b: Anticipated world balance of nitrogen (N), phosphate (P₂O₅), and potassium (K₂O) for 2022, Europe

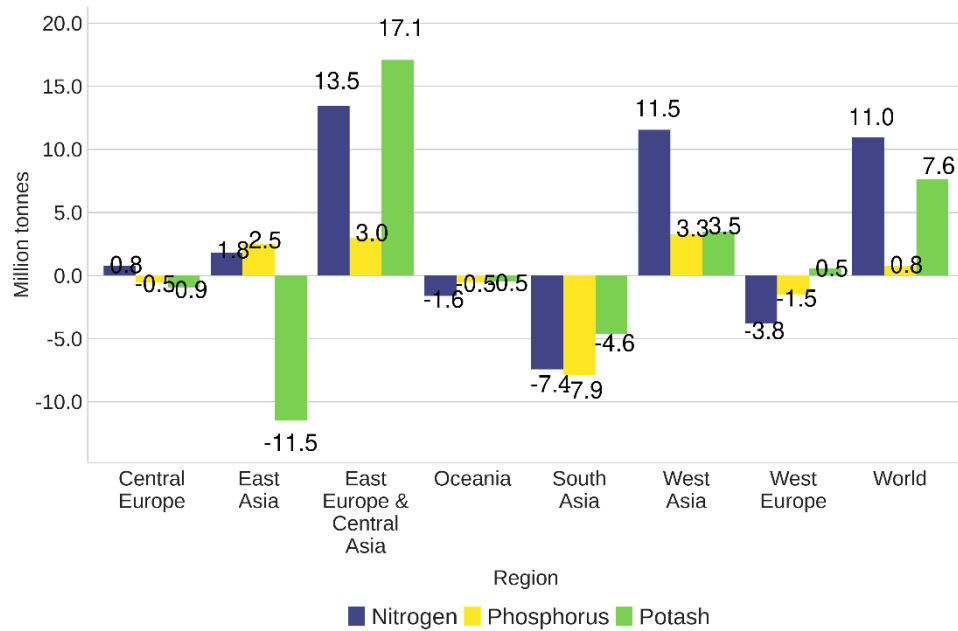
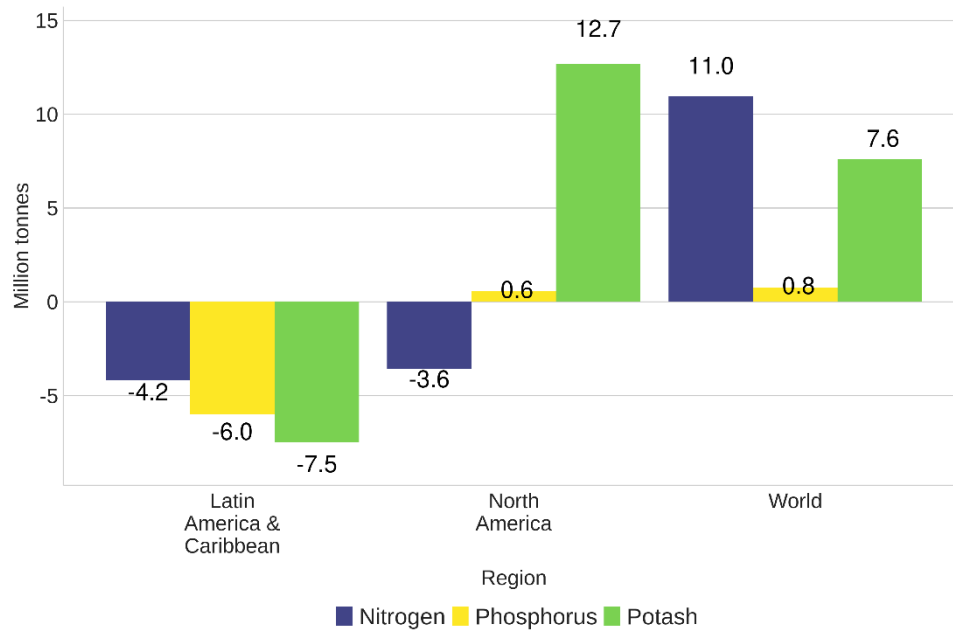


Figure 1.1.8c: Anticipated world balance of nitrogen (N), phosphate (P₂O₅), and potassium (K₂O) for 2022, Americas



World reserves have increased on average and this means that the risk of running out of phosphate rock resources is low.

Volatility in the global supply of rock phosphate is likely to be affected more by global supply chain risks such as financial crashes, geopolitical decision making, or environmental regulations than by the reserve base itself.

From the USGS estimated figures in figure 1.1.8a, there was a 73% increase in production and a 109% increase in the reserve base from 1995 to 2019. This suggests that there is no significant risk in the short to medium term supply of phosphate rock from global reserves.

The location of key reserves remains in a selection of key countries, namely Morocco, China, the US, and to some extent Russia and South Africa.

In areas with historically high phosphate use such as the UK, soil reserves are high and food production continues to increase despite decreasing use of inorganic phosphate fertilisers from phosphate rock. This is further illustrated in figure 1.1.8b, which shows the differences of phosphate use between different global regions.

More efficient use of phosphate fertiliser, increased use and availability of recycled phosphate from organic materials, such as anaerobic digestate, animal manures, and sewage sludge, will mean a higher percentage of phosphate requirements in certain countries could be replaced by organic sources.

Trends

With world reserves of phosphate rock having increased, as well as the fact that some regions have managed to increase food production while decreasing phosphate rock use, the current and future status for this indicator is positive. In addition, the UK and other countries are also working toward making better use of phosphate fertiliser, which could further extend the availability of phosphate reserves.

According to the USGS, the rated capacity of global phosphate rock mines is projected to increase to 261 million tons in 2024 from 238 million tons in 2020, including production of marketable phosphate rock in China of between 80 million and 85 million tons per year. Most of the increases in production capacity are planned for Africa and the Middle East, where major expansion projects are in progress in Algeria, Egypt, Guinea Bissau, Morocco, Senegal, and Togo.

World consumption of phosphate rock is projected to increase to 49 million tons in 2024 from 47 million tons in 2020. Asia and South America are expected to be the leading regions of growth.³⁷

Indicator 1.1.9 Water withdrawn for agriculture

Headline

Water is essential to food production. Agriculture accounts for around 70% of fresh water withdrawn (from rivers, reservoirs, or groundwater extraction) globally. Water withdrawals for irrigation have increased globally, most significantly in OECD and EU countries, but have declined in the Middle East and North Africa. Climate change is likely to increase the importance of irrigation relative to rainfed agriculture and increase pressures on water withdrawals.

Context and Rationale

The principal sources of water resources for agriculture are rainfall and 'stored' sources, mainly surface water (rivers and lakes) and groundwater (shallow and deep aquifers). Rainfed agriculture relies on precipitation water that does not run over the surface in the form of streams (and subsequently rivers and lakes) or soak down to enter groundwater reservoirs. Irrigated agriculture relies on drawing freshwater from surface water or groundwater sources in competition with other sectors and human activities.

Rainfed agriculture is facing the greatest challenges from changing weather patterns resulting from climate change. These challenges include droughts, floods, and extreme rainfall and weather events. Precipitation anomalies on grazing lands are also a threat to livestock production.

A majority of world agriculture currently relies on rainfall rather than irrigation. However, irrigated agriculture plays a crucial role in global food supply. Low-income and lower-middle income countries as well as landlocked developing countries heavily rely on water withdrawals for agriculture compared to other sectors, such as industries and municipalities. Irrigation leads to a fall in the overall volatility of agricultural output, raises cropping intensity and encourages the

³⁷ USGS, 'Mineral Commodity Summaries 2021', [REDACTED]

cultivation of high-value crops. Irrigation is an important source of global agricultural output growth. Agriculture is by far the largest user of freshwater, accounting for more than 70% of global withdrawals of water, which are continuing to increase. In the past two decades, industrial withdrawals have declined, while municipal withdrawals have increased only marginally since 2010. Agricultural withdrawals have continued to grow at a faster pace, although more slowly since 1980, and the share of agricultural withdrawals has increased slightly since 2000.

Demand for water resources does not only come from agriculture, but also from other industry sectors and a human need for water to meet drinking and sanitation needs. There is increasing concern about how these various demands will be met going forward alongside threats from climate change that could diminish water availability and increase demand in some sectors and regions. Therefore, this indicator considers one aspect of this wider issue, the amount of water withdrawn for agriculture. Water challenges, in the form of physical lack of freshwater and inadequate infrastructure or shortages through inadequate rainfall, affect different regions to greater or lesser extents.

There has been a strong trend towards the use of more water efficient crops and better water management practices. Higher water efficiency can also be gained by using nitrogen-based fertilisers.

Data and Assessment

Indicator: Agricultural water withdrawal

Source: World Resources Institute (WRI); FAO Statistics

Figure 1.1.9a: Agricultural water withdrawal, by region m³/year

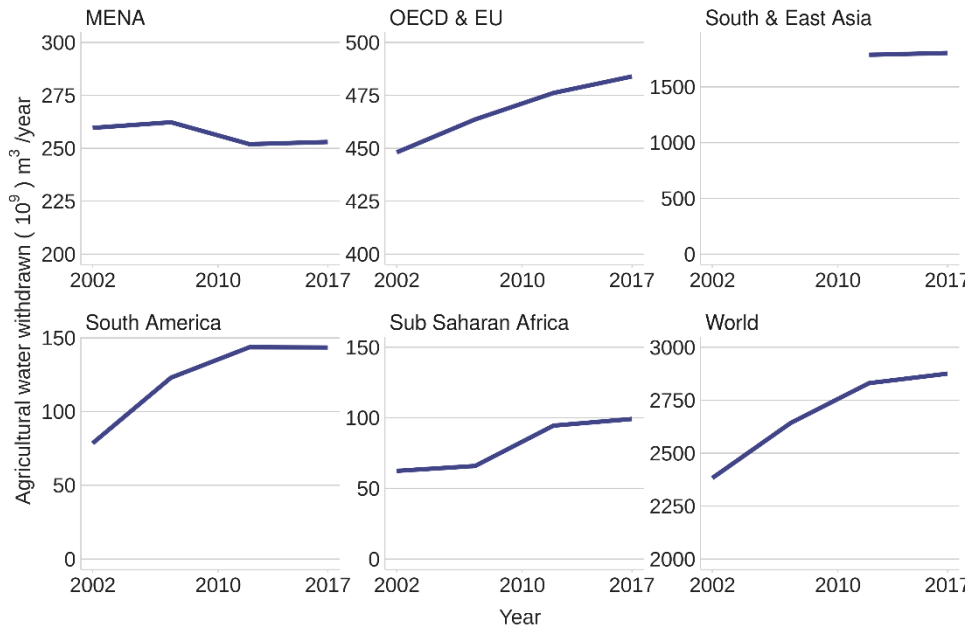


Figure 1.1.9b: Percentage change of irrigated land area by region

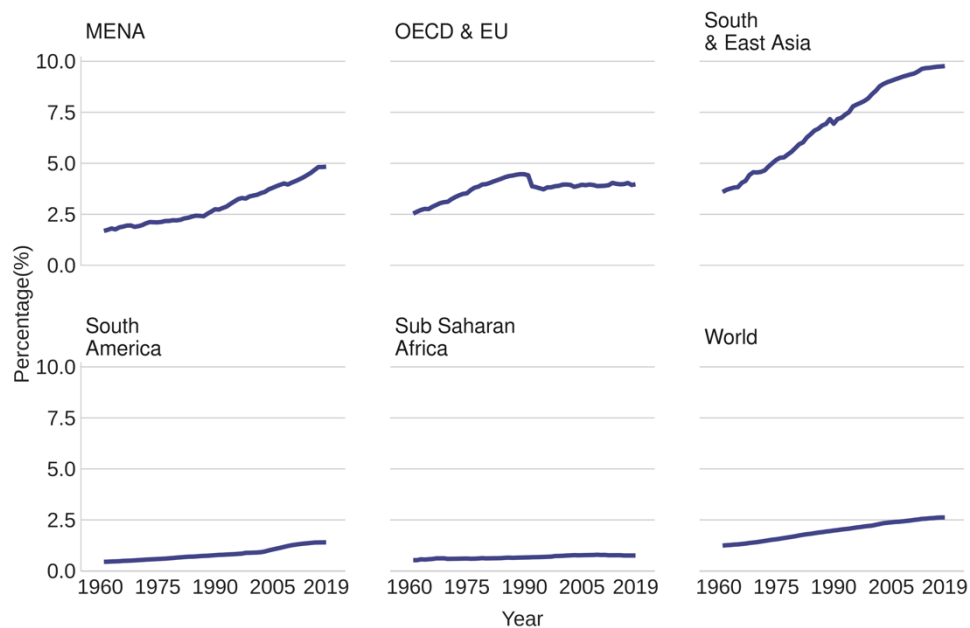
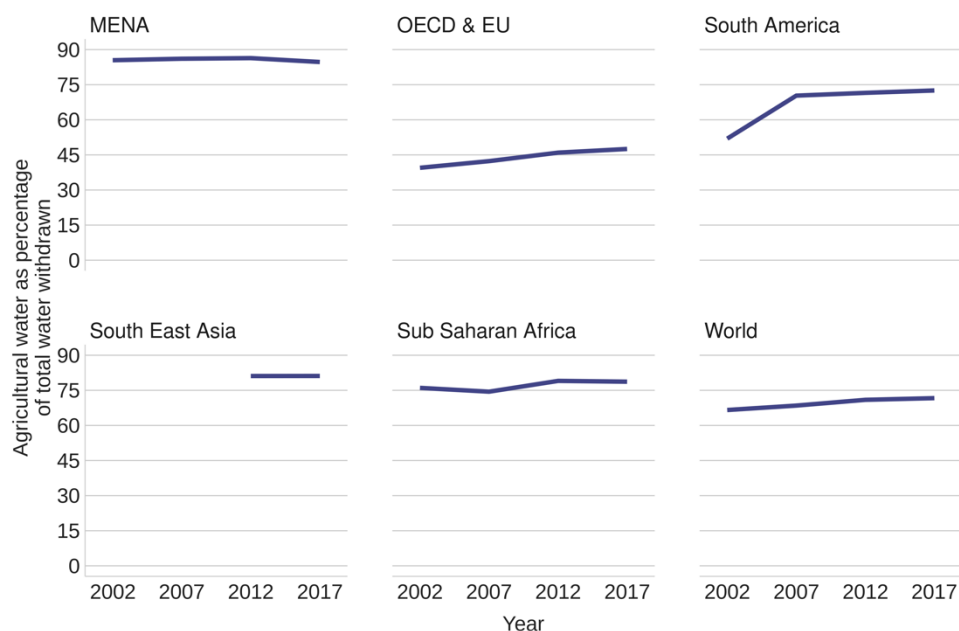


Figure 1.1.9c: Water withdrawal for use by agriculture as a percentage of total internal renewable water resources



Water extracted for agriculture has risen in all regions except the Middle East and North Africa, which has seen a small fall of 3.5% between 2007 and 2017 as seen in figure 1.1.9a. Note that each region has been plotted on different scale for clarity.

Sub-Saharan Africa has seen the largest rise in water extraction since 2007 with a 50.5% rise in usage, followed by South America with 16.6% and OECD and EU countries with 4.4%.

Since 2010, the percentage of land area irrigated has remained relatively constant with small rises in the Middle East and North Africa (0.8%), South and East Asia (0.4%), South America (0.1%), and OECD and EU countries (0.08%). Sub-Saharan Africa saw a small drop of 0.003%, which is due to an increase in land area. However, in some cases these increases represent quite a large change in the amount of land irrigated. For instance, South America currently has 1.4% of agricultural land irrigated, South and East Asia 9.7%, the Middle East and North Africa 4.8%, Sub-Saharan Africa 0.6%, and OECD and EU countries 4%.

Figure 1.1.9c shows that between 2007 and 2017, the percentage of water withdrawn for agriculture has risen in all regions except the Middle East and North Africa, which fell by 1.4% to 84.7%. The Middle East and North Africa, however, remains the region with the highest proportion of water extracted for agriculture.

OECD and EU countries had the largest rise in water extracted for agriculture of 5.2%, to 47.5%. However, this is still significantly below the other regions, reflecting the proportion of industrialised economies within OECD and EU

countries. South America at 2.2% and Sub-Saharan Africa at 4.3% have had small rises in the proportion of water extracted for agriculture. The Middle East and North Africa has recorded a small fall of 1.4% in the proportion of water extracted for agriculture, but this is still the highest proportion of any region at 84.7%.

Aquastat only has a representative sample of countries from South and East Asia since 2012. The complete dataset has only been collected for two years, so it's not possible to draw any firm conclusion of trends about water extraction. However, water extraction for agriculture appears to be stable.

Overall, this data shows that agriculture is placing more stress on water resources than other sectors.

Trends

The levels of water efficiency in crops vary between regions. High-income countries in Europe and Northern America have a capital-intensive and efficient agriculture sector as well as a high rate of public expenditure on agricultural research and development. Such countries have a greater capacity to address the water efficiency and scarcity challenges. By contrast, in Sub-Saharan Africa, where countries have lower levels of agricultural capital intensity and expenditure on research and development, farmers have difficulty in accessing irrigation equipment, modern inputs and technologies, including technologies to optimize the efficiency of water use in rainfed agriculture. Conversely, countries in Southern Asia irrigate and employ modern inputs on about half of the region's cropland, while most irrigated areas are highly water stressed

As outlined in the risk section of indicator 1.1.2, climate variability and change will increase the likelihood of extreme weather events, such as droughts and changes in rain patterns. This will further increase reliance on withdrawn water rather than on rainwater. More than 62 million hectares of crop and pasture land already experience both very high water stress and drought frequency, with 15 times that area suffering from either one or the other. Global temperature rises on the way to 2°C will cause a steep increase in exposure to water scarcity from reduced precipitation, particularly in Northern and Eastern Africa, the Arabian Peninsula and Southern Asia. River flow will also drop, increasing water scarcity in regions including the Mediterranean, Near East and large parts of Northern and Southern America. The scale of the impact is highly uncertain however, with a range of models producing different results. Drought frequency and severity will also increase, with particular impacts in parts of Southern America, Western and Central Europe, Central Africa, and Australia. Direct climate impacts on heavily

irrigated regions could see 20 to 60 million hectares of irrigated land reverting to dependency on rainfall.³⁸

Indicator 1.2.1 Global agricultural labour force capacity

Headline

Productivity increases and mechanisation have meant the number of people employed as agricultural labour has decreased globally since 2010. The COVID-19 pandemic, however, has highlighted how the sector's reliance on seasonal workers for critical harvesting periods can be a potential risk to production if there are factors that reduce the availability of these workers.

Context and Rationale

The availability of agricultural workers plays an important factor in global food production and the impacts this has on global food supply. Besides permanent agricultural workers, there is also a great need for seasonal workers to meet the fluctuating seasonal labour needs across the world. The COVID-19 pandemic has particularly shown the contributions internal and international seasonal workers make towards ensuring food supply when travel restrictions hindered their ability to work within the agri-food system.

Lower-income countries tend to have a higher percentage of people employed in the agriculture sector compared to high-income countries. The economic importance of the agriculture sector, and with it the number of employees, decreases the richer a country becomes. At the same time, agricultural workers in high-income countries add more value to the gross domestic product than in lower-income countries. This likely means that thanks to technological advances, more efficient farming practices, and other factors, fewer agricultural workers are needed in high-income countries than in low-income ones.

Over the last twenty years, there has been a decline in the number of people working in the agriculture sector due to productivity increases, requiring fewer workers. Despite that, agriculture is still the second largest source of employment

³⁸ FAO, 'The State of Food and Agriculture: Overcoming Water Challenges in Agriculture' (2020), [REDACTED], pages 28, 40 and 41.

in the world after the service sector, with China and India accounting for almost half of the global agricultural labour force.

This indicator tracks the employment figures within the agriculture sector at the global level. The data needs to be carefully interpreted given that any changes in the global agricultural labour force could be a sign of productivity gains, meaning technological improvements have reduced the need for large numbers of workers, or of emerging issues within the sector.

Data and Assessment

Indicator: Number of employees in the agriculture sector by region

Source: FAO; UN Department of Economic and Social Affairs International Migration

Figure 1.2.1a: Number of total agricultural employees by region

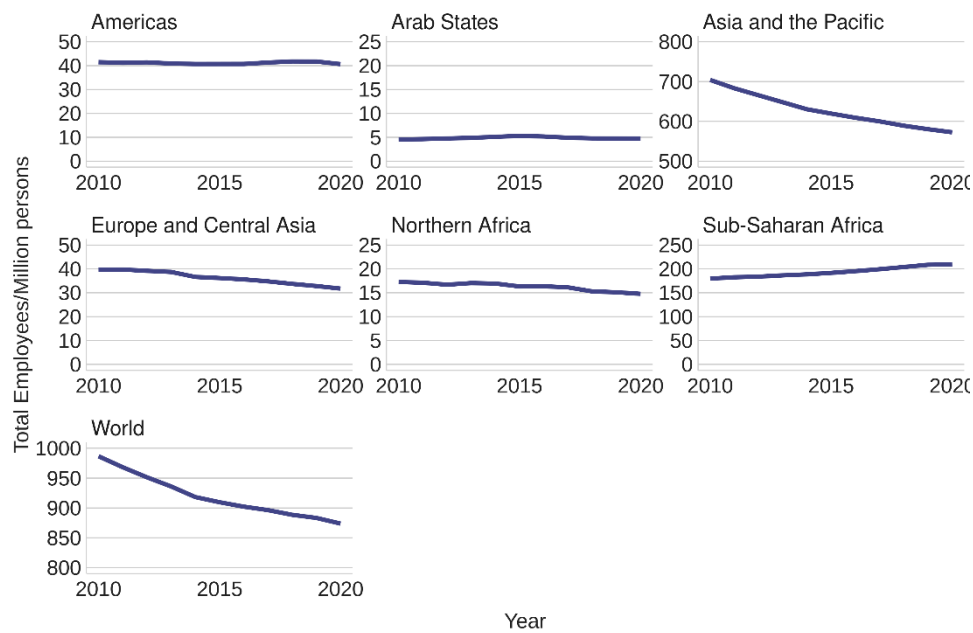


Figure 1.2.1b: International migrant workers as a percentage of total local population by region

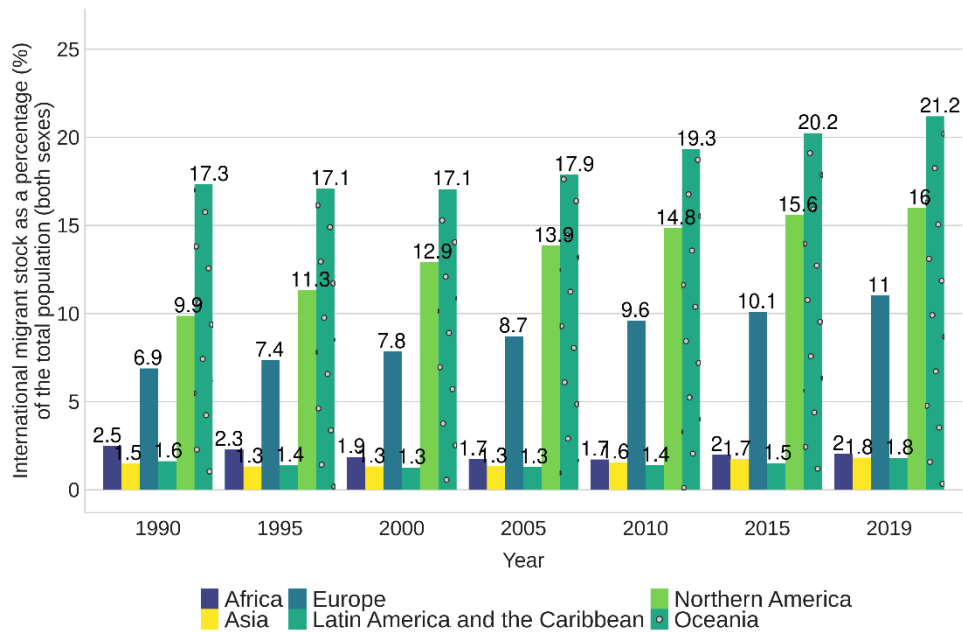
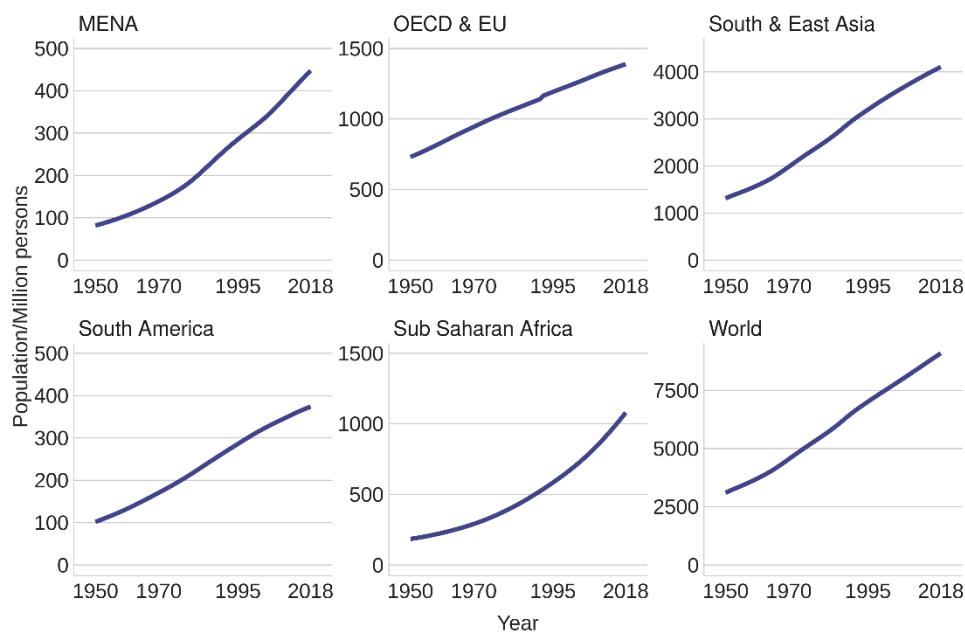


Figure 1.2.1c: Total population of each region, in millions

Figure 1.2.1c: Total population of each region, in millions



Assessment

The number of agricultural employees globally continues to decline, most likely due to increased mechanisation in Asia and the Pacific Region, which employ 572,488,000 workers. Sub-Saharan Africa, employing 209,392,000 workers. These continue to have the highest number of agricultural employees and show an increase in the number of agricultural employees of 29,757,000 workers, since 2010. The Arab States are the only other region to show an increase of 231,000 workers. In developed countries, agricultural labour constitutes a lower proportion of the workforce.

Europe (11%), North America (16%), and Oceania (21.2%) have a particularly high availability of migrant labour compared to Africa (2.03%), Asia (1.82%), and Latin America and the Caribbean (1.8%). The proportion of migrant stock has risen faster in these regions: in Europe by 1.4%, North America by 1.15%, and Oceania by 1.9% compared to Africa at 0.32%, Asia at 0.25%, Latin America and Caribbean at 0.4%. All regions, however, are seeing a higher proportion of migrants today than in 2010.

Trends

In 2020, COVID-19 movement restrictions impacted on the availability of seasonal workers, especially in high-income countries. Many governments enacted policies to counteract such shortfalls by extending the stay of seasonal workers already present in the country, incentivising the domestic population to work in the agriculture sector, or facilitating limited entry of seasonal workers under strict health protocols.³⁹ Despite the success of some of these policies in mitigating against the worst predicted labour shortages, the COVID-19 pandemic has shown the vulnerability the agriculture sector faces regarding its reliance on seasonal workers during critical harvest periods. The data above suggests both that the global agricultural workforce is declining over time and that the reliance on migrant labour is increasing. Although both trends are very gradual at the global level, stronger trends are seen at a country-by-country and region-by-region basis.

Whether this represents an increased vulnerability in relation to the global food system will depend upon which food product is being considered and its individual reliance on labour, whether domestic or migrant.

³⁹ IOM UN Migration, 'COVID-19: Policies and Impact on Seasonal Agricultural Workers' (2020),

Indicator 1.2.2 Components of global food demand growth

Headline

Population growth will play the most significant role in food demand growth over the coming years. As outlined in indicator 1.1.1, global food production is projected to outpace global food demand. While increasing incomes in low and middle-income countries will lead to increased calorie consumption and meat consumption, other factors, such as health and environmental concerns, will be more relevant in determining consumers' food preferences in high-income countries.

Context and Rationale

Global demand growth for food is closely linked to the issues outlined in indicator 1.1.1 regarding the capacity of global agriculture to increase food supply to meet demand. It is, therefore, essential to understand the underlying factors that will drive global food demand growth over the coming decades to predict whether food supply can meet demand. The factors that have the most influence on global food demand are population growth, increasing calorie consumption, and changing consumption patterns:

- Population growth is expected to be the main driver of demand growth for most agricultural commodities.
- The average dietary energy supply, measured as calories per capita per day, indicates whether people can meet their daily calorific needs. In 2019, the average global energy supply stood at 2950 calories per person, indicating that there is, theoretically, enough food produced globally to meet people's calorie requirements.⁴⁰ These calories, however, are not evenly distributed across regions, with high-income countries consuming more calories than low-income ones. The calories also do not reflect the quality of people's diet and whether they enable people to meet their nutritional requirements.
- Changing consumption patterns will also have an impact on overall demand growth. These patterns are determined by populations' food preferences and available income to realise them.

Data and Assessment

⁴⁰ FAO, 'World Food and Agriculture: Statistical Yearbook 2020', [REDACTED]

Indicator: Components of global food demand

Source: FAO

Figure 1.2.2a: Change in demand for food products and calorie consumption per capita per day by region, 1961 – 2018

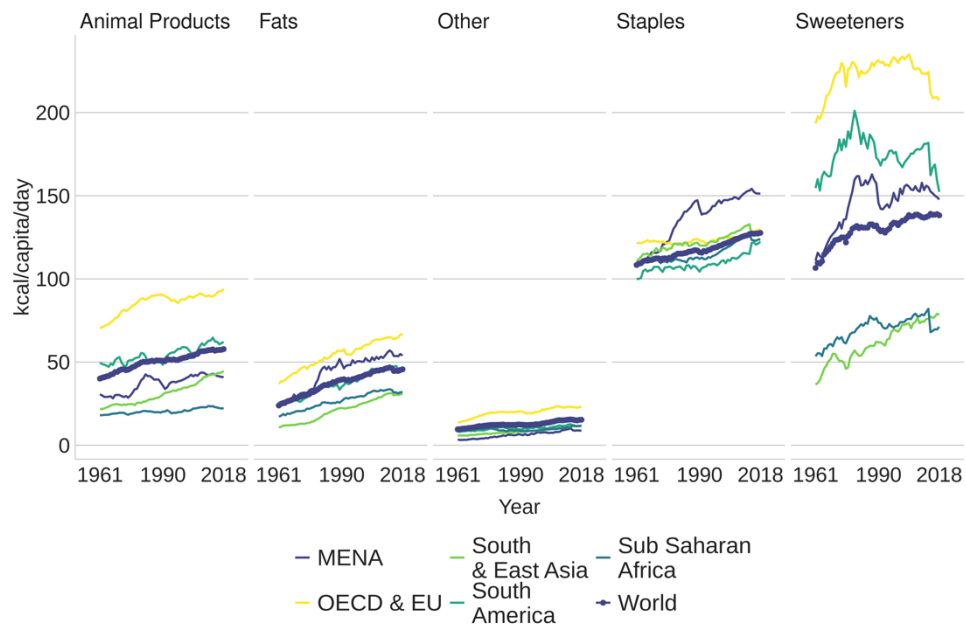
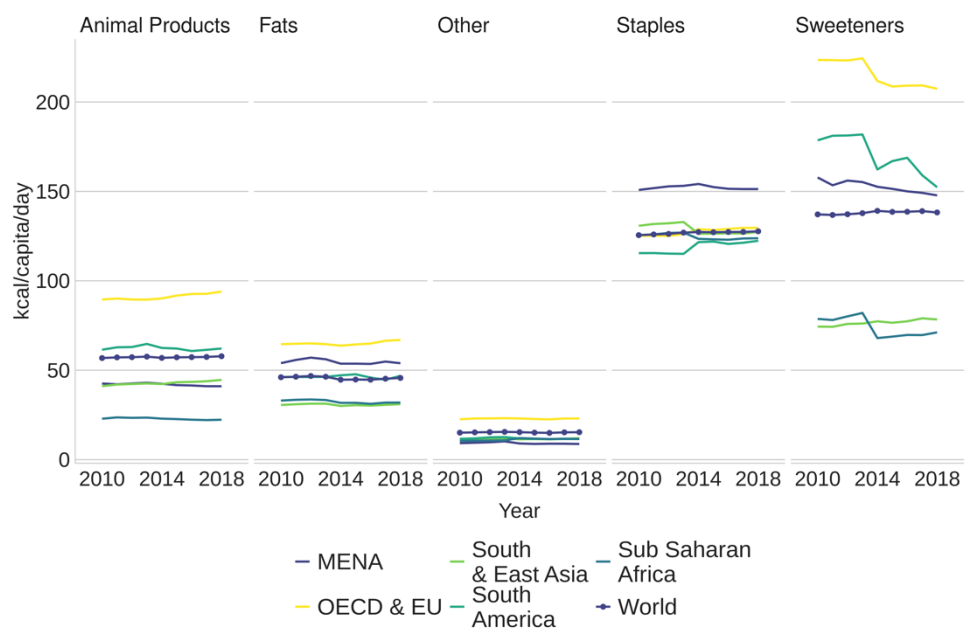


Figure 1.2.2b: Change in demand for food products and calorie consumption per capita per day by region, 2010 – 2018



OECD-FAO Outlook 2020-2030 Shows demand for all food products type is rising across all regions. Expect for Fish which forecast to fall in Europe and Central Asia, Staples which forecast to fall in the Near East and North Africa and North America and Sweeteners which demand is forecast to fall in Europe and Central Asia and Latin America and Caribbean.

The OECD and EU countries have consistently had the highest calorie intake across different food products except for staples, which is led by the Middle East and North Africa. Sub-Saharan Africa and South and East Asia typically have the lowest calorie intake except for staples, South America has the lowest calorie intake of staples.

Since 1961, the amount of animal products, fats and staples consumed has slowly increased, Consumption of other products has remained reasonably stable, and the consumption of sweeteners has been quite volatile.

Since 2010, global demand has risen for all product types other than fats which have fallen slightly (0.4 kcals per capita). Regionally, the picture is slightly more complicated. OECD and EU countries have seen a rise in per capita consumption of all products except sweeteners which have fallen by 16.1 kcals/capita/day to 207.4 kcals/capita/day.

MENA per capita consumption has fallen for all products except staples that has risen 0.5 kcals kcals/capita/day to 151.3 kcals/capita/day.

Sub Saharan Africa per capita consumption has fallen for all products except other products that has risen 1.1 kcals kcals/capita/day to 11.5 kcals/capita/day.

South and East Asia per capita consumption has risen for all products except other products that has fallen 3.4 kcals kcals/capita/day to 127.3 kcals/capita/day.

South America per capita consumption has risen for all products except other products and sweeteners that have fallen 0.1 kcals kcals/capita/day to 11.5 kcals/capita/day and 26.2 kcals kcals/capita/day to 152.3 kcals/capita/day.

Trends

The FAO expects an annual growth rate of 0.9% for the global population size over the next ten years to 8.5 billion people in 2030. Population growth will be mainly concentrated in developing regions, such as Sub-Saharan Africa and India. This is an important figure to observe to determine how changes in food demand will impact the UK's food supply as agricultural demand growth will mainly be driven by population growth and less so by per capita demand growth.

Global demand for agricultural commodities, including for non-food uses, is projected to grow at 1.2% per annum over the coming decade. This is well below the growth experienced over the last decade, which amounted to 2.2% per

annum. This is mainly due to an expected slowdown in demand growth in China and other emerging economies, and lower global demand for biofuels.

While it is estimated that demand will rise for all agricultural commodities, a larger increase will likely be seen in high-value products such as vegetable oils, livestock products, and fish. In high-income countries, per capita availability of animal protein is expected to grow slowly over the coming decade. The increase in poultry meat availability is projected to account for over half of additional animal protein availability over the coming decade. Demand for poultry meat is projected to grow steadily as consumers see it as a healthier and more environmentally sustainable product than beef and pig meat. Poultry is also more affordable than other meat types, which will also contribute to growing poultry demand in middle and low-income countries. By contrast, beef, pig meat and sheep meat consumption levels are expected to remain stable. Weakening demand for beef in high-income countries is due to several factors, including concerns about the climate impact of cattle production, and dietary recommendations by governments, which in several countries, advise limiting weekly intakes of red meat. In the UK it is advised to limit your intake to under 70g per day.

There are some uncertainties when creating projections for consumption patterns. Consumers' purchasing decisions are increasingly driven by factors beyond prices and taste, such as health and environmental concerns. One expression of such environmental concerns is the increase in vegetarian and vegan lifestyles in high-income countries.⁴¹

Looking at the average dietary energy supply, the FAO has produced different predictions for high, low, and middle-income countries based on different future scenarios. Depending on the level of change towards more sustainable practices, high-income countries would reach a daily calorie consumption between 3,271 and 3,408 calories by 2030, while low and middle-income countries could achieve between 2,724 and 2,923 calories per day. Throughout all of these scenarios, animal products make up a larger number of calories in high-income countries than in low and middle-income countries. The food group providing the most calories in low and middle-income countries are cereals.⁴²

⁴¹ FAO, 'OECD-FAO Agricultural Outlook 2021-2030', [REDACTED]

⁴² FAO, 'The future of food and agriculture: Alternative pathways to 2050' (2018), [REDACTED]

Indicator 1.2.3 Share of global production internationally traded

Headline

The proportion of agricultural products traded has increased since the 2000s. A growing global trade in agricultural products increases resilience to supply shocks affecting particular geographical areas and allows for a more efficient global food supply chain. However, reliance on the global trading system increases vulnerability to events which disrupt to this system, such as trade restrictions. The COVID-19 pandemic caused some disruption to supply chains but global trade in products is expected to continue in the long term.

Context and Rationale

Global trade in agricultural and food products plays an essential role in providing food security for the UK, but also for the world. Trade allows for a more efficient global food system where products can move from regions with more suitable conditions and resources for production to countries with less ideal conditions or higher demand for food than can be met by domestic production. A functional trading system also allows to spread the risks of supply shortages or price spikes if a country can import agricultural and food products from multiple supply sources.

Thinly traded commodity markets can reflect substantial trade protectionism, an increase in bilateral trade deals, but also the costs of transporting goods between countries. If some type of shock occurs in such a market, the impacts on the availability and affordability of the commodity will be greater than in a more active market.

In the last few decades, international trade in agricultural and food products has more than doubled in real terms due to technical and economic trade barriers having been lowered or removed. Developing countries are increasingly participating in global markets, and their exports make up more than one-third of global agri-food trade.

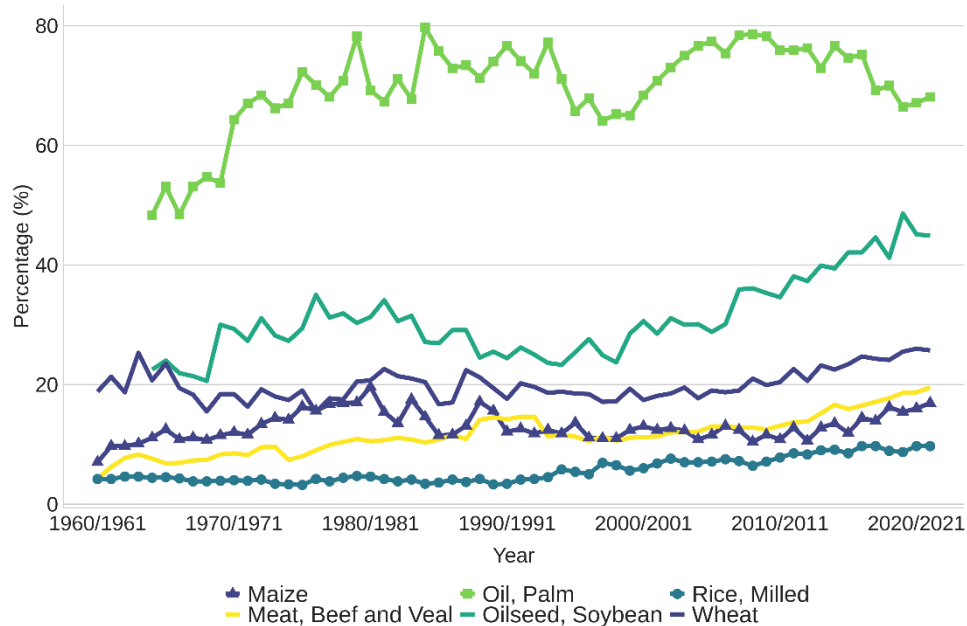
Increasing or stable trends in the percentage of commodities internationally traded would be desirable in order to strengthen the resilience of the global commodity markets and the UK's food security.

Data and Assessment

Indicator: Share of global production internationally traded

Source: FAO

Figure 1.2.3a: Percentage of global production internationally traded



Assessment

Since the early 2000s, growth in agricultural trade has been facilitated by a lowering of agri-food tariffs, reforms to trade-distorting producer support, and the signing of multiple trade agreements. Agricultural trade has also been supported by strong economic growth in emerging countries, particularly in China, and by growing demand for biofuels as countries seek to reduce their CO₂ emissions and their dependence on fossil fuels. This expansion in trade has contributed to a more efficient allocation of agricultural production across countries and regions.

The percentage of global commodity trade has remained relatively constant since 2010/2011. Palm oil has been the most volatile commodity, falling to 66.4% in 2019/2020 from 78.3% in 2009/2010. Soybeans remain the second highest commodity traded globally by percentage at 48.6% in 2020/2021.

Trends

Overall, trade in terms of value has been increasing over the last twenty years. High-income and upper-income countries account for the highest increase in global agri-food exports, having grown their exports from about 25% in 2001 to 36% in 2018. Lower-middle income and low-income countries export and import fewer agricultural and food products in comparison, although notable exceptions are Vietnam, Nepal, and Uganda, which have managed to slowly increase their exports over this time period.⁴³

Primary production, processing, trade, logistics (both domestic and international), and final demand have been affected by COVID-19 measures. Nevertheless, global food markets remained well balanced over the last year.

The FAO expects that trade will increasingly reflect diverging demand and supply developments among trading partners over the next ten years. Some regions are projected to experience large population or income-driven increases in food demand but do not necessarily have the resources for a corresponding increase in agricultural output. Moreover, socio-cultural and lifestyle-driven changes in consumption patterns are transforming the profile of demand in most regions. Agricultural trade will therefore play an increasing role in ensuring global food security and nutrition over the next decade, by connecting producers to diversified consumer demand around the world.

Divergent productivity growth, climate change impacts on production, the outdoor workforce, food safety, as well as transport being affected by extreme weather events such as storm surges, heat and flooding, and developments in crop and animal diseases may all pose a risk to food supply.

Globally, about 17% of cereal production is traded internationally, with shares for single commodities ranging from 9% for rice to 25% for wheat. The share for total cereals is projected to increase to 18% by 2030, largely due to increased trade in rice. Rice will nevertheless remain a thinly traded commodity. India, Vietnam, and Thailand will continue to lead global rice trade, but Cambodia and Myanmar are expected to play an increasingly important role in global rice exports. Russia surpassed the European Union in 2016 to become the largest wheat exporter and is expected to increase its lead throughout the next ten years, accounting for 22% of global exports by 2030. Concerning maize, the United States will remain the leading exporter, followed by Brazil, Ukraine, Argentina, and Russia. The

⁴³ FAO, 'The State of Agricultural Commodity Markets 2020',

European Union, Australia, and the Black Sea region are expected to continue to be the main exporters of other coarse grains.⁴⁴

Risk: Restrictions and barriers to trade

Global markets and trade play an important role in managing disruptions to food supply. Some countries may respond to supply disruption by reducing or banning exports to shore up domestic supplies. This can reduce the availability of global commodities and drive prices up, which may cause further shocks to markets. During the COVID-19 pandemic, the International Food Policy Research Institute tracked the number of food export restrictions imposed by countries. In 2020, a total of 19 countries imposed temporary export bans on certain agricultural goods, all of which were lifted within the same year.⁴⁵ None of these restrictions had a significant impact on UK food supply.

Indicator 1.2.4 Concentration in world agricultural commodity markets

Headline

The concentration in world agricultural commodity markets shows how diversely traded a commodity is. A strong concentration for a particular commodity in a few countries could have negative impacts on price, supply, and food security. No major changes are expected for the concentration in world agricultural commodity markets and the top exporting countries of these commodities. This stability means that there are no concerns in relation to the UK's ability to access global food supply.

Context and Rationale

The concentration of production and market power over a commodity in a particular country or region can have harmful effects both in terms of price, supply, and overall food security. If production is heavily concentrated, overall markets are vulnerable to localised supply shocks including those from weather and climate

⁴⁴ FAO, 'OECD-FAO Agricultural Outlook 2021 to 2030', [REDACTED]

⁴⁵ IFPRI, 'COVID-19 Food Trade Policy Tracker' (2020), [REDACTED]

change. They are also vulnerable to economically or politically motivated national actions.

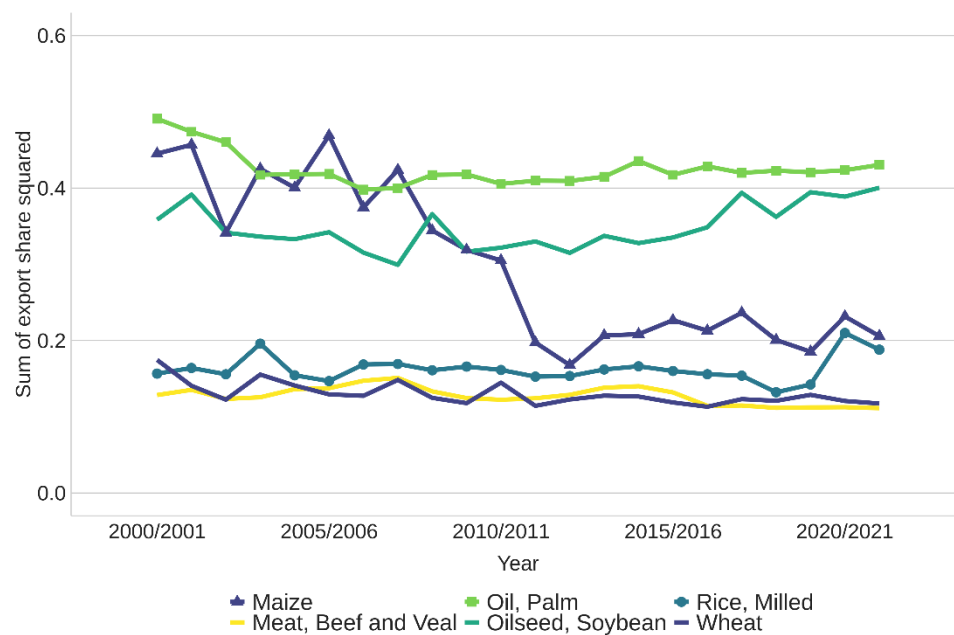
Greater diversity in countries supplying some of the main agricultural and food commodities provides a higher level of food security. Attempts by individual countries to restrict export supplies, for whatever reason, would not result in any substantial, sustained increase in prices or actual shortages.

Data and Assessment

Indicator: Herfindahl index of exporter concentration for various commodities / Share of top 3 leading exporting countries⁴⁶

Source: USDA PSD

Figure 1.2.4a: Herfindahl indices of export concentration



⁴⁶ The Herfindahl Index (HI) measure of market concentration is often used by competition authorities, but it also provides a measure of export market concentration. The HI is a sum of the squares each market share has, this gives larger market share a stronger influence on the results or heavier weighting. Thus, a market completely dominated by one country would give a HI of 1.0. If all top 20 suppliers had equal shares, the index would be $1/20 = 0.05$. This is considered a better measure than the concentration ratio (CR) of the top 3 or 5 suppliers because it accounts for the shares of all suppliers, and it is affected by the split of the market between the largest suppliers. For example, if a country had 50% of the export market and the remaining 50% of market was equally divided between 10 countries. The Herfindahl Index would account for all 11 countries. The 3 suppliers CR would be 60% and 5 suppliers CR 70% whereas the HI would be 0.3. Market concentration here is defined in terms of exporting *countries* rather than *firms*.

Figure 1.2.4b: Table on shares of the leading supplier countries (*data from 2018)

Commodity	2010/2011		2020/2021	
	Top 3 Exporters	Share of global trade	Top 3 Exporters	Share of global trade
Beef	Brazil	20.4%	Brazil	22.4%
	Australia	17.7%	Australia	13.0%
	USA	9.9%	USA	11.8%
Maize	USA	50.8%	USA	39.3%
	Argentina	17.9%	Brazil	21.1%
	Brazil	9.2%	Ukraine	13.4%
Palm oil	Malaysia	45.9%	Indonesia	56.0%
	Indonesia	44.0%	Malaysia	32.9%
	Papua New Guinea	1.5%	Guatemala	1.7%
Rice	Thailand	30.2%	India	40.7%
	Vietnam	19.9%	Vietnam	12.6%
	USA	10.0%	Thailand	11.1%
Soybeans	USA	44.7%	Brazil	49.5%
	Brazil	32.7%	USA	37.4%
	Argentina	10.1%	Paraguay	1.5%
Wheat	USA	26.4%	Russia	19.1%
	EU	17.4%	EU	14.8%
	Australia	14.0%	USA	13.4%

Assessment

The overall trade picture remains stable. There has been considerable diversification in Maize supplies in recent years, as is indicated by the HI falling by 0.492 to 0.206. Maize HI has fallen 0.1 since 2010. Oilseed showed a small upward trend rising from 0.322 in 2010/2011 to 0.400 in 2020/2021. Other products have remained relatively constant. The main countries of export are remaining relatively static with two out of three remaining in the top three in 2019 compared to 2009.

Trends

The FAO expects no change in the top three exporting countries for wheat, maize, and rice over the next ten years. While normal growing conditions are expected to lead to positive production prospects for the main grain-producing regions, inter annual climate variability and extreme weather events accentuated by climate change may cause higher volatility in cereal yields, thereby affecting global supplies and prices. Wheat and maize yields are particularly volatile in some large exporting countries such as Russia, Ukraine, Brazil, and Argentina, compared to Canada, the United States, and the European Union.

Meat exports, including beef, sheep, pork, and poultry, are concentrated, and the combined share of the three largest meat exporting countries, Brazil, the European Union, and the United States. These are projected to remain stable and account for around 60% of global world meat exports over the next ten years. In Latin America, traditional exporting countries are expected to retain a high share of the global meat trade, benefiting from the depreciation of their currencies and surplus feed grain production.

Regarding exports of soybeans, Brazil has taken over the role of main exporting country with steady growth in its export capacity and is projected to account for 50% of total global exports of soybean over the next ten years.

Indonesia and Malaysia are expected to continue to account for 60% of total vegetable oil exports, mainly palm oil, during the next decade. However, the share of exports in production is projected to contract slightly in these countries as domestic demand for food, oleochemicals, and, especially, biodiesel uses is expected to grow.⁴⁷

⁴⁷ FAO, 'OECD-FAO Agricultural Outlook 2021-2030', [REDACTED]

Theme 2: UK Food Supply Sources

This chapter of the UK Food Security Report looks at food security in terms of where the UK gets its food from. It focuses specifically on the UK's principal sources of food at home and overseas. It describes the UK's domestic production, and trends in agricultural productivity, fisheries and food waste both before and after the "farm gate". It considers important factors in maintaining domestic productivity, such as soil health, fertiliser use, agricultural inputs, and biodiversity. The chapter also discusses the principal sources on which the UK relies for its food imports. It considers data points which will help future UK Food Security Reports assess the food security impacts of the UK's 2020 departure from the EU, in terms both of changes to domestic production practices and to the UK's trading relationship with the world. These impacts are likely to take some time to become apparent in statistics.

In terms of this theme, food security means strong and consistent domestic production of food combined with a diversity of supply sources that avoids overreliance on any one source.

Key messages

- The UK has diverse and longstanding trade links that meet consumer demand for a range of products at all times of the year. Trade is dominated by countries in the EU and it is too early to say what effect leaving the EU might have on that trade.
- Domestic production is also stable, with variations in yield and consumer demand balanced by imports and exports. Both agricultural production and manufacturing have become increasingly efficient and are geared towards meeting consumer demand, although food waste is still high.
- The biggest medium to long term risk to the UK's domestic production comes from climate change and other environmental pressures like soil degradation, water quality and biodiversity. Wheat yields dropped by 40% in 2020 due to heavy rainfall and droughts at bad times in the growing season. Although they have bounced back in 2021, this is an indicator of the effect that increasingly unreliable weather patterns may have on future production.

Domestic production

To ensure a consistent supply of food, the UK relies both on its own production and on imports. Home-grown produce is the largest source of food for the UK. Resilience is ensured through a combination of strong domestic production from the UK's productive agriculture and food manufacturing sectors, and a diverse range of overseas supply sources.

The UK currently produces about 60% of its domestic food consumption by economic value, part of which is exported. This means just under half of the actual food on plates is produced in the UK, including the majority of grains, meat, dairy, and eggs. This figure would be higher without exports. UK supply comprises domestic production excluding exports, plus imported food. The production to supply ratio, important for understanding the UK's self-sufficiency, has remained stable over the last two decades, and for crops that can be commercially grown in the UK has been around 75%.

The UK has a productive agricultural sector and a domestic agri-food manufacturing industry that produces food to high standards. The amounts and types of food produced are driven by market forces and consumer demand for goods, rather than by assessment of overall quantity of food or of self-sufficiency. Many factors affect the output of domestic production, including:

- The availability and suitability of land for particular forms of production.
- Inputs such as labour, water, fertiliser, pesticides, and seeds.
- Climate and environmental factors such as soil health and rainfall.

In 2020 71% of UK land area was used for agricultural production, the majority of this being grassland for grazing rather than crops. Not all land is suitable for growing crops, and some is suitable only for specific crops. Land use overall has changed little in the last thirty years, with annual variation between specific crops due to factors such as the weather and prices rather than long-term or systematic variation. Domestic production faces a number of long-term and short-term risks, including soil degradation, drought and flooding, diseases, risks to fuel and fertiliser supplies, and changing labour markets. In the long term, climate change impacts are likely to have a negative effect on the proportion of high-grade arable farmland available in the UK.

Diverse international supply sources

Overreliance on one geographical area and dependence on particular supply sources makes food supply more vulnerable, while diversity of sources makes it more resilient. UK consumer preferences and diets include a range of products that cannot be grown in the UK or cannot be grown year-round. Therefore, the UK does not produce everything it eats or eat everything it produces.

In 2020, the UK imported 46% of the food it consumed. Having a diverse range of international sources makes food supply more resilient, as if the production or output of one source is disrupted, other sources can meet demand. No one country provided more than 11% of those imports, a picture which has been stable for some time. By value, £48 billion of food, feed, and drink (FFD) was imported and £21.4 billion was exported.

Overall, the UK's food supply is concentrated on the UK and Europe, with over 80% of supply coming from these main sources. The remainder is mostly spread between Africa, Asia, North America, and South America. This picture has changed little in the last 10 years. EU countries continue to be the main source for FFD imports and are therefore essential to the UK's food security. 39% of FFD imports by value were despatched from 4 EU countries (the Netherlands, Republic of Ireland, Germany, and France) in 2020.

The landscape of UK imports and domestic production is currently in a state of change after leaving the European Union, the UK's largest trading partner in agri-food. The impact of the UK's new trading relationship is not yet visible in data. Domestic production may also change in future with the removal of subsidies managed through the European Common Agricultural Policy (CAP) and through the planned introduction of new environmental land management schemes in parts of the UK.

The UK is more reliant on particular countries or regions for specific foodstuffs at different times of the year, due to a variety of growing seasons across the world. Seasonality is complex and product specific. The UK depends on diverse supply lines to meet demand for out-of-season products throughout the year, following growing seasons across the world. Year-round access to out of season fresh fruit and vegetables (FFV) has increased in the last 20 to 30 years, leading to longer and more complex supply chains.

Focusing on food categories:

- The UK is largely self-sufficient in production of grains, producing over 100% of domestic consumption of oats and barley and over 90% of wheat. Average yields over recent decades have been broadly stable but fluctuate from year to year as a result of better or worse weather. Increasingly unpredictable and extreme weather as a result of climate change is likely to exacerbate these fluctuations. Wheat yields in 2020 were the lowest since 1981 due to of unusually bad weather. However, preliminary data indicates they have since increased in 2021.
- In meat, milk, and eggs, the UK produces roughly equivalent volume to what it consumes. In 2020 it produced 61kg of meat, 227L of milk and 172 eggs per person per year. By value, the UK is a net importer of dairy and beef. This reflects UK consumer preferences for eating higher value products, while lower value products are exported.
- The UK produces a significant proportion of its other crop needs, including around 60% of sugar beet, 70% of potatoes and 80% of oilseeds. Apart from a recent pest-related reduction in oilseeds, these proportions have remained stable over the last ten years. Climate change represents a risk to production both in terms of making conditions unsuitable for some crops and allowing new pests to proliferate but it may also benefit new types of crops.
- The UK produces over 50% of vegetables consumed domestically, but only 16% of fruit. 93% of domestic consumption of fresh vegetables was fulfilled

by domestic and European production, while fruit supply is more widely spread across the EU, Africa, the Americas, and the UK.

- The UK both produces and consumes fish and seafood, but is a net importer overall. UK consumer preference is for fish mainly caught outside UK waters, such as cod, haddock, tuna, and shrimp and prawns. This means that the UK exports much of what it catches and imports much of what it eats. Supply sources for imports are diverse, with northwest Europe and China the most significant sources. Most of the fisheries which supply UK imports are well managed and have sustainable stocks, although climate change presents a risk to fish stocks. The UK has a significant fishing fleet which mainly exports to the EU, US and China. Important exports include herring, mackerel, salmon and nephrops (scampi).

Inputs and waste in domestic production

There are a range of contributing inputs and risk factors which can affect the UK's domestic production capacity and food security both in the short and medium term.

Agriculture relies on specific inputs to produce food. The cost of these inputs varies year to year. This presents a significant risk to farming economies, and therefore to food security. Profit margins in agriculture are low and so fluctuations in prices can cause problems. Feed is both the most significant expense for UK farmers and the least stable in terms of price. The overall supply, diversity, and sustainability of fertilisers, pesticides, seeds, and fuel amongst other inputs are also important and vary in different degrees for different categories.

Inefficiencies and wastage in food production and processing reduce both the quantity of food that can be consumed domestically or be exported. They also represent unnecessary land and resource use, contributes millions of tonnes of carbon emissions, and involves billions of pounds of wasted value.

Estimated annual combined surplus and waste in primary production is 3.6 million tonnes (Mt), which is between 6 and 7% of total output. Wastage in households and post farm gate businesses also reduces the effective supply of UK food. Waste post-farmgate is estimated at 9.5Mt, of which 7.7Mt is in households and hospitality and 1.8Mt in manufacturing and retail. These figures compare to around 43Mt of food purchased for consumption in the UK. The highest contributor to this total by weight were UK households, with 70% of post-farmgate waste arising in the home. Long term trends do show a reduction in UK household food waste but average waste of 4 key products was generally around 20% between 2018 and 2021. Household food waste fell sharply at the outset of the coronavirus (COVID-19) pandemic with improved food management behaviours leading to a significant reduction in self-reported household food waste in 2020. These positive changes, however, have started to decline with people returning to a pre-pandemic lifestyle and food waste levels have increased again in 2021 to pre-pandemic levels.

Long term sustainability of UK food production

The UK's agriculture sector relies on natural capital, and the degradation of this natural capital poses an underlying threat to the UK's ability to produce food. The ecosystems services from natural capital provide key inputs to food production, which often go uncounted, as does the impact of agriculture on the environment which produces them. The UK is not unique in this around the world and understanding and adapting to produce food sustainably and to maintain and improve natural capital stocks in the long term is key.

Sustainable production methods help to ensure the UK's long term food security by protecting the natural capital embedded in soil, water, and biodiverse ecosystems. In England, three new environmental land management schemes will incentivise producers in to farm more sustainably. A Sustainable Farming Scheme is currently being considered by the Welsh Government. The impacts of these schemes on agricultural land use are not currently clear but will be monitored in future UK Food Security Reports.

Key natural capital assets for food production are soils. Estimates suggest soil degradation, erosion, and compaction are costing about £1.2 billion each year and reducing the capacity of UK soils to produce food. Whilst trends appear to be negative, specific data is currently lacking.

The wider impacts of human exploitation of the atmosphere as a natural asset through climate change and emissions also pose significant risks to production and food security. As a consequence of unusual weather patterns linked to climate change, wheat yields in 2018 were 7% below the 2016 to 2020 average, and 17% down in 2020. Total economic losses for wheat, potatoes and oilseed rape in the UK caused by ozone were calculated to be £185 million in 2018, with more than 97% of those losses occurring in England. Based on modelling by the Met Office, significant future risks to UK food production include heat stress to livestock, drought, pests and pathogens, and increased soil erosion risks.

Indicator 2.1.1 UK Production Capability

Headline

The UK currently produces the equivalent of about 60% of domestic consumption by value, part of which is exported. About 54% of food on plates is produced in the UK, including the majority of grains, meat, dairy, and eggs. Self-sufficiency is about 54% in fresh vegetables, and 16% in fruit, as subsequent indicators will set

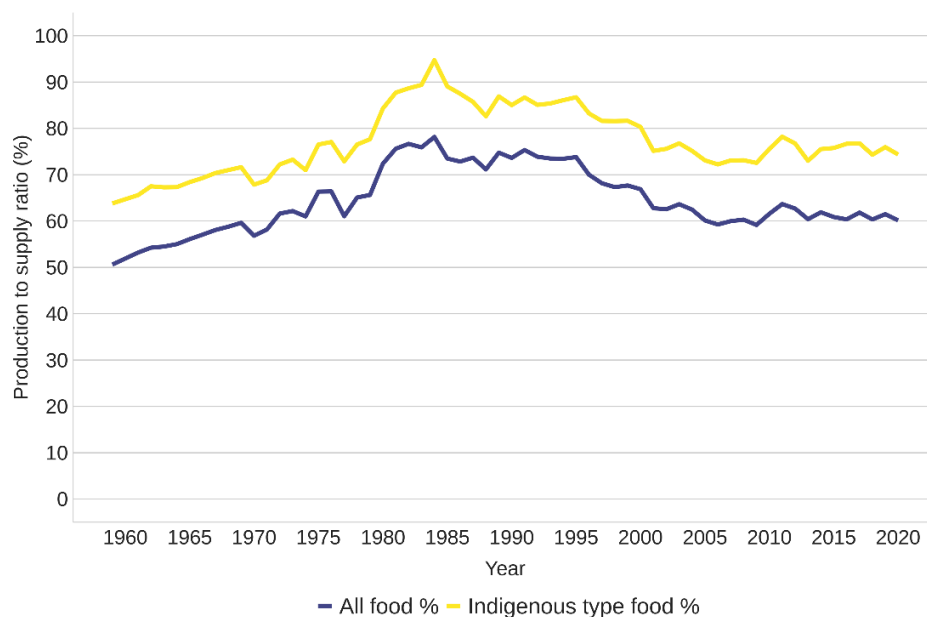
out. UK food production is driven by market forces rather than aiming to maximise calorie production from available land.

Context and Rationale

The Food Production to Supply Ratio is calculated as the farmgate value of raw food production divided by the value of raw food for human consumption. Essentially it compares the value of what is produced in the UK with what is consumed. The production to supply ratio is higher for indigenous type food, the food products which can be produced in the UK. For all food it is lower because this accounts for consumption of food types which cannot be produced in the UK for reasons of climate, soil, or other factors.

Data and Assessment

Figure 2.1.1a: UK food production to supply ratio



Source: Defra Agriculture in the United Kingdom (AUK) 2020

The production to supply ratio is estimated to be 60% for all food in 2020 and 76% for indigenous type food (that which can be commercially grown domestically). Actual consumption of UK-produced food is closer to 54%, as a part of UK production is exported.

Trends

From a peak in the mid-1980s the production to supply ratio declined into the early 2000s and has not changed significantly since then. Market prices and the

economics and risks inherent in agricultural production have led the ratio to settle at about 60%. Alterations in the proportion of domestic production to supply would change the level of exposure to national scale risks, including climate change and extreme weather events.

Indicator 2.1.2 Current land area in production

Headline

In June 2020, 71% of the UK's land, or 17.3 million hectares, was used for agricultural production, of which 72% was grassland and 26% cropland, with the remainder being set-aside or fallow land. Trends in land use have been generally stable over the last 30 years, but climate change poses a threat to high quality arable farmland and competition for land use is increasing.

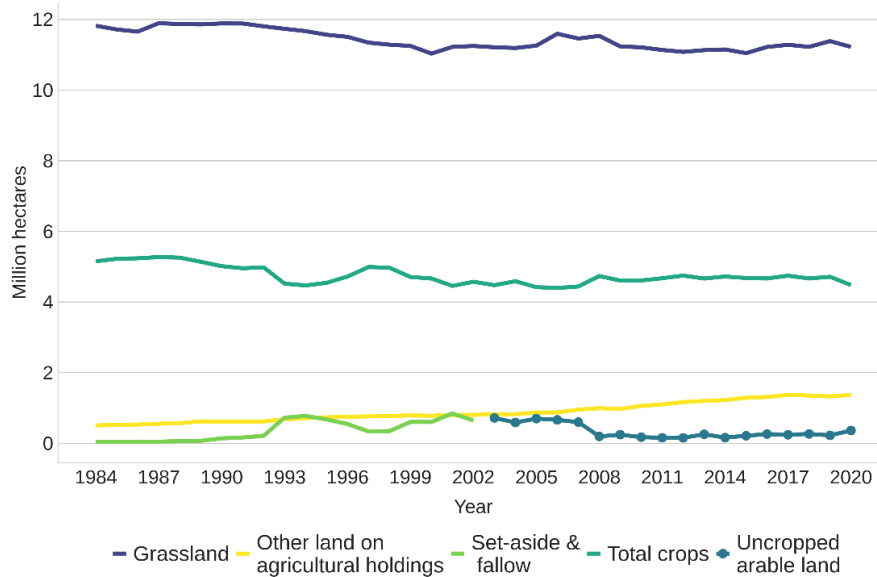
Context and Rationale

Measuring the land area in production gives a sense of the place of food production in overall land use. The definition of land used for agricultural production includes arable, horticultural, uncropped arable, common rough grazing, grassland (temporary and permanent), and land for outdoor pigs, but not woodland or other non-agricultural land.

It is important to recognise that not all land is created equal. Grass will grow almost anywhere, but gradient, soil quality, rainfall, water levels, and other factors make much of the UK's agricultural area unsuitable for crops, while other parts are suitable only for specific crops.

Data and Assessment

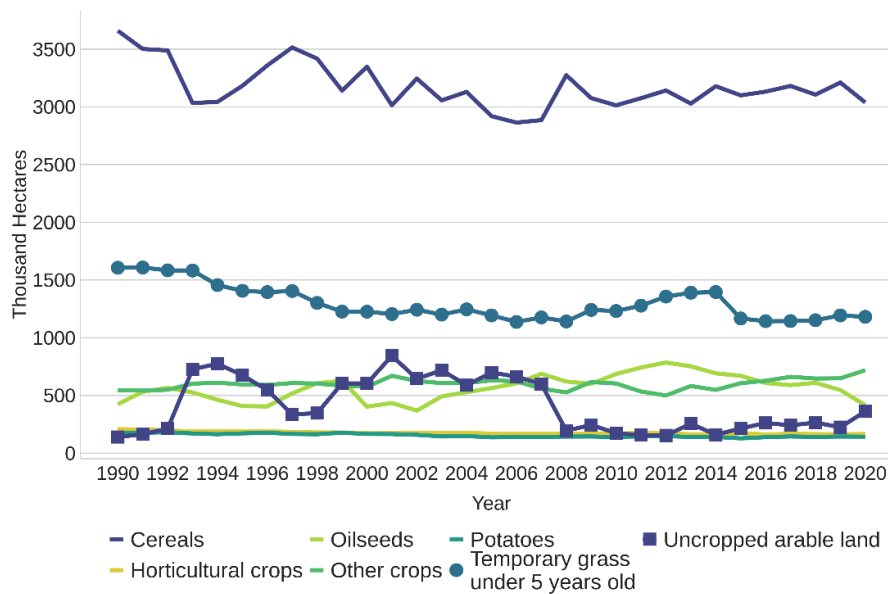
Figure 2.1.2a: UK agricultural land use



Source: Defra AUK 2020

Total agricultural land use, divided here into grassland and cropland, has declined a little since 1990. The high proportion of grassland primarily reflects the unsuitability of much of the UK’s land for growing crops, and the relative suitability of those areas for grazing. As illustrated by the next figure, a small proportion of this grassland (1.2 million ha) is temporary grassland on croppable land, for example in crop rotations.

Figure 2.1.2b: Breakdown of UK croppable area on agricultural holdings



Source: Defra AUK 2020

The majority of the UK's croppable land is used for grain production (3 million ha), with 415,000 ha used for oilseed, 142,000 ha for potatoes, 166,000 ha for horticultural crops, and 719,000 ha for other crops in 2020. Much of the annual variation between specific crops is due to factors such as the weather and prices rather than any long-term and more systematic variation. An exception is the decline since 2018 in land given to oilseeds, which partly reflects increased pesticide resistance among stem flea beetles and the withdrawal of neonicotinoid insecticides. An increase in 'Other crops' suggests farmers are planting a larger variety of crops than previously.

Trends

Over the last 30 years land use has been fairly stable for most crops, allowing for fluctuations in prices and weather conditions. However, Defra-commissioned research suggests climate change impacts under a medium emissions scenario could reduce the proportion of 'best and most versatile' arable farmland (ALC 1, 2, and 3a) from 38.1% of agricultural land on a 1961 to 1990 baseline to 11.4% by 2050, with consequences for food production and meeting Net Zero. Under a high emissions scenario it could reduce to 9.2% of agricultural land; however there is quite high uncertainty about projections of this kind.⁴⁸ Meeting Net Zero, climate change mitigation, and biodiversity goals will increasingly add to existing, competing pressures on land use.

Indicator 2.1.3 UK food imports and exports

Headline

In 2020, the UK imported 46% of the food it consumed. No one country provides more than 11% of those imports, a picture which has been stable for some time. By value, £48 billion of FFD was imported and £21.4 billion was exported.

⁴⁸ Key and others, 'The impact of climate change on the suitability of soils for agriculture as defined by the Agricultural Land Classification - SP1104' (2014), http://sciencesearch.defra.gov.uk/Document.aspx?Document=13364_SP1104Finalreport.pdf, page 65.

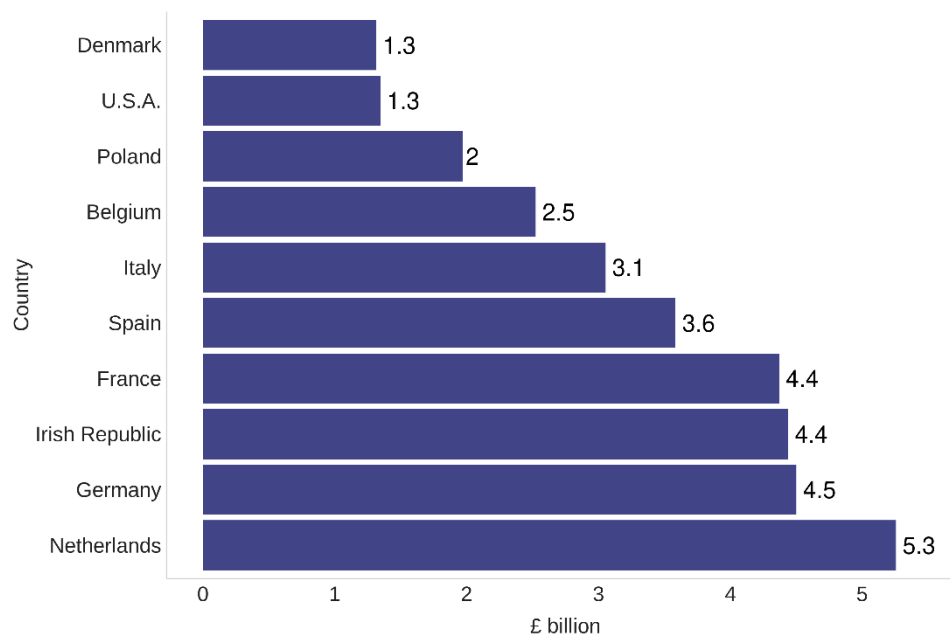
Context and Rationale

The scale of the UK's imports highlights the value to the UK of imported food and drink. Being well connected with producer countries and having a strong internal economy to compete for their exports puts the UK in a more secure position in terms of food security.

Imports and exports also support consumer preference for particular types of products. In the meat industry, for example, international supply chains allow UK consumers to buy their preferred cuts, while others are exported for profit. Exports also make valuable economic contributions to the sector, helping to sustain domestic production and local economies all around the UK. For food security purposes, considering exports alongside imports gives perspective to the scale of imports, as well as providing an overview of the value of UK production which is not consumed in the UK. It should be noted that this economic value is not equivalent to nutritional value for consumers when considering imports and exports; for example, whisky is the UK's most valuable FFD export.

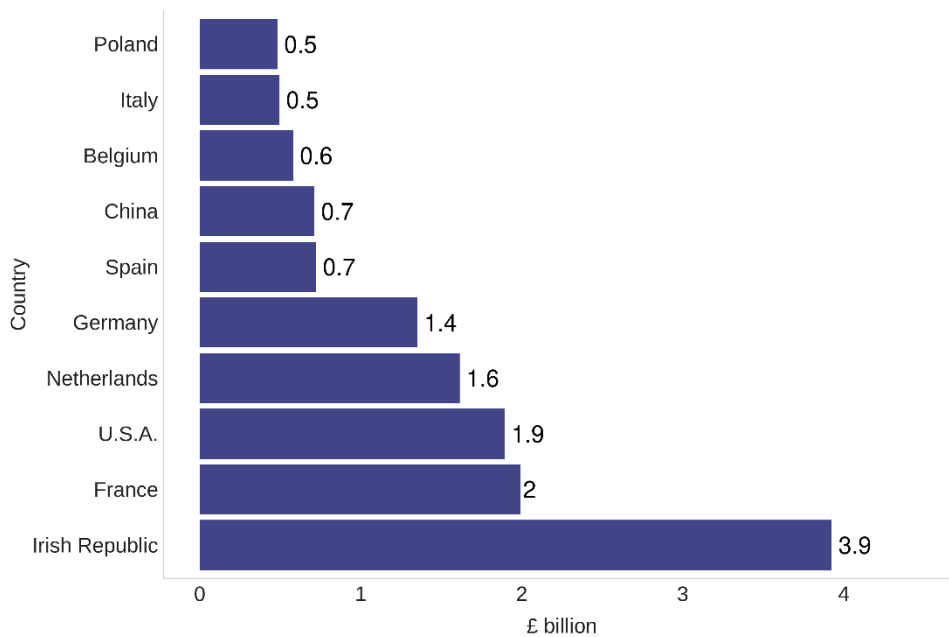
Data and Assessment

Figure 2.1.3a: UK imports of FFD by value and by country of dispatch, 2020



Source: Defra AUK 2020

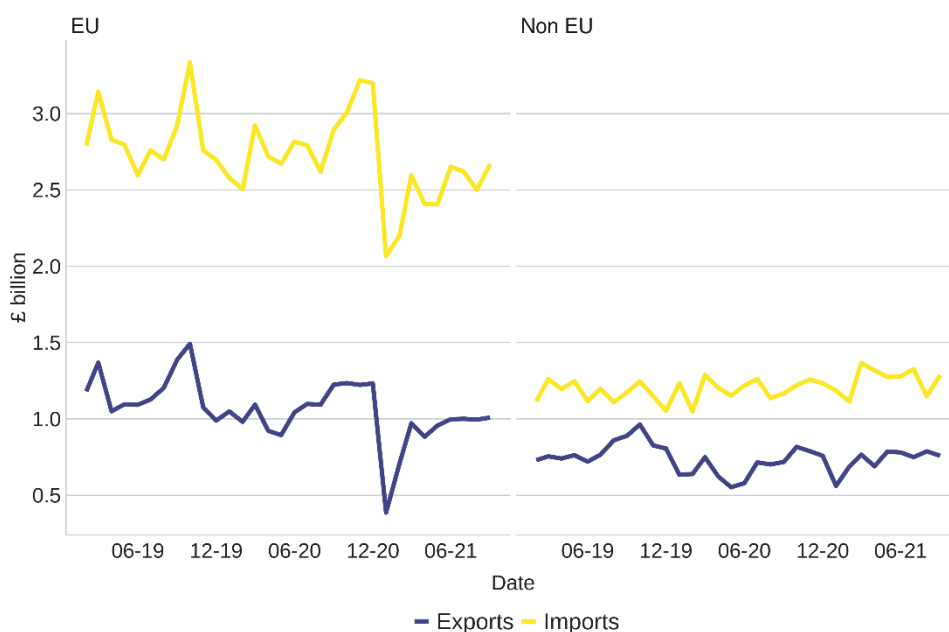
Figure 2.1.3b: UK exports of FFD by value and by country of destination, 2020



Source: Defra AUK 2020

The UK's top trading partners in value terms, with the exception of the USA, are all close geographical neighbours. In the case of Ireland, there is a shared land border, whilst France and the Netherlands represent the shortest sea crossing and a major international port facility respectively. In addition, the climate in Italy, southern France, and Spain, coupled with UK consumer expectations for year-round availability, mean that these countries are essential for trade in fresh produce.

Figure 2.1.3c: Values of UK FFD trade EU and non-EU, 2019 to 2021



Source: HMRC

From the latest available data, which covers the period up to September 2021, the overall value of FFD trade has recovered from the low levels seen in early 2021 and is largely back to levels seen in previous years. In Q3 2021, the total value of exports was 6% lower than Q3 2020 and the total value of imports was 2% lower than Q3 2020.

For many commodities, imports were higher than usual at the end of 2020, suggesting that some trade may have been brought forward to avoid potential issues at the border in early 2021. In addition, for some sectors (including meat and fish), imports have continued to be affected by reduced requirements for hospitality as a result of the pandemic.

Trends

The make-up of leading trading partners has been very stable over many years, with occasional intermittent small changes to the order of the top 10. The departure of the UK from the European Union and the Single Market on 1 January 2021 has changed the rules and regulations that govern export and import processes with the EU, and in 2020, COVID-19- had a temporary impact on availability of some products, like pasta and eggs. Changes have also been evident to trade patterns between GB and Northern Ireland as a result of the Northern Ireland Protocol (NIP). Geographical proximity will still be a major factor in trading arrangements, particularly for relatively low-value short shelf-life products.

Indicator 2.1.4 EU share of UK imports

Headline

EU countries continue to be the main source for FFD imports and are therefore essential to the UK's food security. 39% of FFD imports by value were despatched from 4 EU countries (the Netherlands, Republic of Ireland, Germany, and France) in 2020.

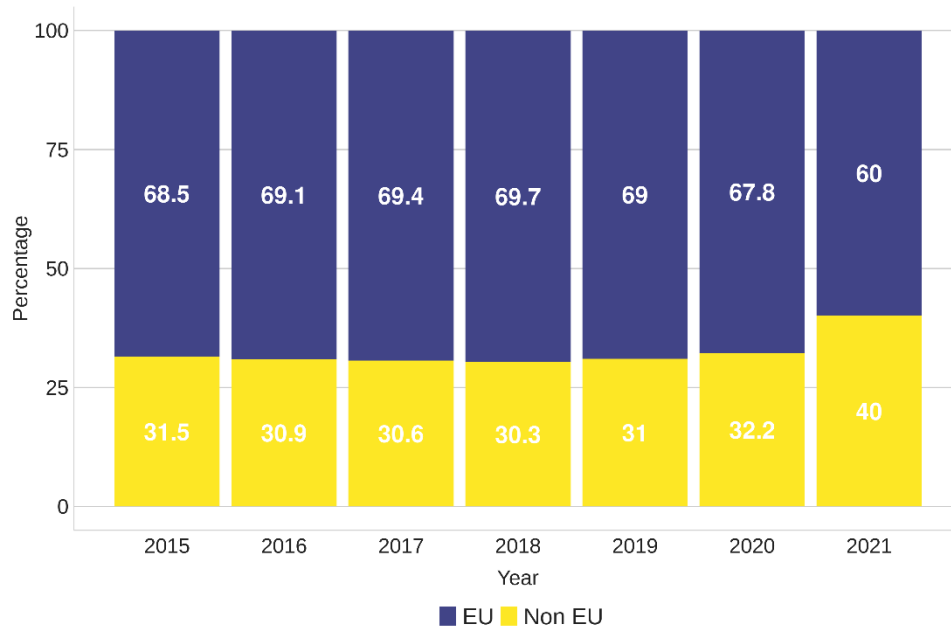
Context and Rationale

Data on imports shows the continued importance of the EU for food imports. In winter months countries in the south of the EU are particularly significant in terms

of fruit and vegetables and the nutritional value and consumer choice those products provide.

Data and Assessment

Figure 2.1.4a: Balance of EU and non-EU imports by value



Source: HMRC

The geographical proximity of the EU influences the amount of trade that it accounts for, and for some animal products like bacon and ham, milk, cream, and eggs, all imports are sourced from the EU. But there are also products where imports are more diverse, such as rice, spices, coffee, and citrus fruits.

Trends

The EU's share of UK imports has remained very stable at around 70% in recent times. It remains to be seen if this will be affected by the UK having left the EU in January 2021. Whilst there appears to be some shift in 2021 from EU to non-EU, this shift is not necessarily new sources of goods. For some items such as fish, coffee, and some fruit, this is thought to be a "trade hub" effect with some imports (including third country origin material) now coming directly to the UK (or recorded as doing so) rather than being previously cleared in the EU before moving to the UK.

Indicator 2.1.5 Overall diversity of supply

Headline

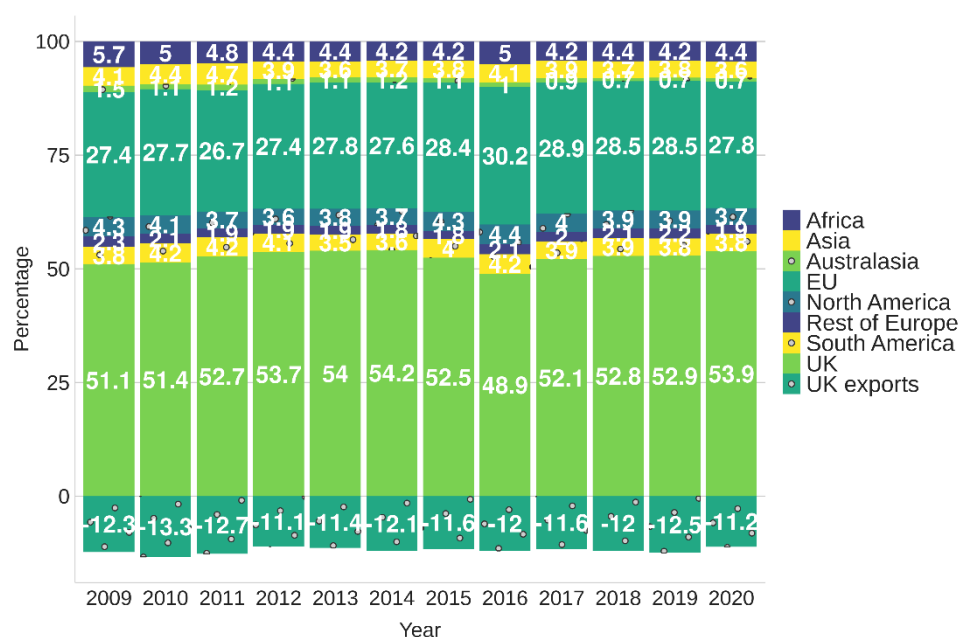
The UK's food supply is concentrated on the UK and EU countries, with over 80% of supply coming from these main sources. The remainder is mostly spread fairly evenly between Africa, Asia, North America, and South America. This picture has changed little in the last 10 years.

Context and Rationale

Diversity of supply reflects the range of supply sources the UK has, including domestic production. Tracking this data allows the UK to prepare in case environmental, economic, or political changes affect the ability of a given country to produce or export a key product, for example due to a natural disaster.

Data and Assessment

Figure 2.1.5a: Origins of food consumed in the UK, 2009-to 2020



Source: HMRC

Supply includes domestic production plus imports, and excludes exports of home production. In 2020, 54% of domestic consumption came from UK production (based on unprocessed value at farmgate), 28% from the EU and the remaining 18% from the rest of the world. 42 countries accounted for 90% of imported

supply, and 27 for 80%. Some countries or regions are uniquely important to supply of particular products like bananas from the Caribbean and Central America, reducing the security of this supply.

Trends

These percentages have changed little over the last 10 years (longer term trends in domestic production as a percentage of supply can be found in the indicators that follow). The vagaries of the weather and harvest impact UK production from year to year, as they do throughout the world. Underlying trends in consumption and demand evolve very slowly over time and structural shifts in trading arrangements also lag.

Indicator 2.1.6 Domestic grain production

Headline

The UK is largely self-sufficient in grain production. Production of grains is dependent on weather conditions and can be volatile year to year but is fairly stable in the long term. Yields were unusually low in 2020 due to bad weather, but provisional results for 2021 show a return to the 5-year average.

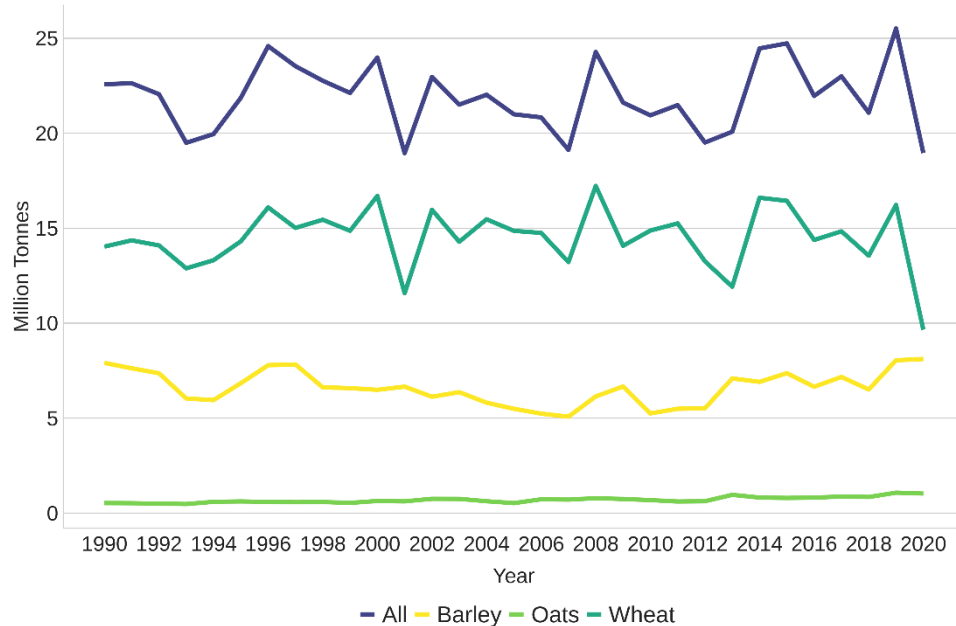
Context and Rationale

Wheat plays a vital part in the UK's diet, environment and economy, accounting for about 30% of daily food energy intake per person in the UK during 1961 to 2011.⁴⁹ It is consumed in bread and bakery products, in breakfast cereals, in pasta, and indirectly (via animal feed) in meat and some types of alcohol such as beer and whisky. Grain is generally also the most efficient form of production in terms of calories per hectare, though the bulk of it is grown intensively, relying on inputs in the form of fertilisers, pesticides, and tractor diesel. Grain production has a significant environmental impact, due to the lack of biodiversity in conventional grain fields, damage to the soil through ploughing, environmental harms caused by fertilisers and pesticides, and the oil use embedded in fertilisers and field operations.

⁴⁹ Shewry, P.R. and S.J. Hey, 'The contribution of wheat to human diet and health', Food and Energy Security 2015: volume 4, [REDACTED] pages 178 to 202.

Data and Assessment

Figure 2.1.6a: Domestic UK grain production



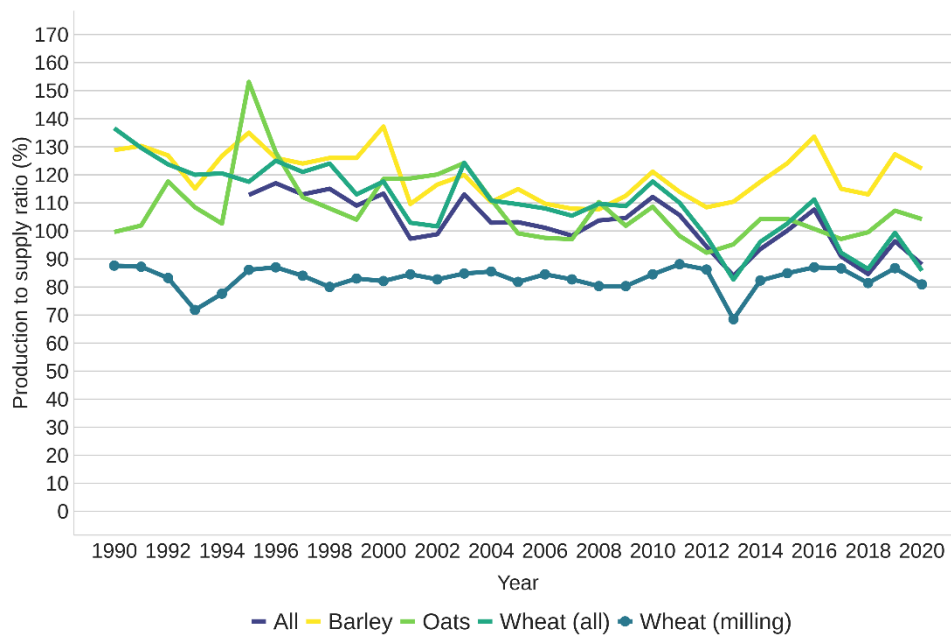
Source: Defra AUK 2020

The UK grows roughly 15 million tonnes of wheat annually, occupying nearly 2 million hectares with some of the highest yields in the world at around 8 tonnes per hectare. The 2018 financial value of wheat produced in the UK was roughly £2 billion, representing a significant contribution to the total value of £9.3 billion for all crops produced by the UK that year.

Production of barley and oats has been fairly stable, with wheat (primarily a winter-grown crop) a little more volatile depending on weather patterns during planting and growing, as seen in 2020. At 9.6 million tonnes, wheat production was its lowest since 1981 due to unusually poor weather conditions at critical points of crop production: very wet weather for preparing the soil and sowing, too dry in the spring when the crops should have established, and bad weather for harvesting. This appears to be an outlier compared to recent years, and provisional results for 2021 indicate a return to the 5-year average; however, climate change is projected to increase the frequency of such events. Barley production on the other hand was 1 million tonnes higher than the 2015 to 2019 average.

In 2020, 11.9 million tonnes of wheat, barley, and oats were used as animal feed, 5.9 million tonnes of wheat and 0.6 million tonnes of oats were milled, while 1.6 million tonnes of barley went into brewing and distilling, and about 0.5 million tonnes of these three grains were used for seed.

Figure 2.1.6b: Domestic UK grain production as percentage of consumption



Source: Defra AUK 2020

The UK is largely self-sufficient in barley and oats, and 81% self-sufficient in milling wheat (slightly higher for wheat overall), which is the most significant grain crop for food consumption in the UK. It is not likely or desirable for this figure of 81% to rise much higher, as the remaining percentage is largely made up of hard wheat types not suited to the UK’s climate and soils. Further to this, global competition in wheat production and prices means there is significant economic risk involved with trying to fully meet domestic milling needs, since any surplus could be undervalued relative to the costs incurred during production. UK farmers instead grow what they are best able to, a mix of milling and feed wheat according to market demand and prevailing weather conditions.

For these reasons, the mix of grain grown in the UK differs somewhat from the grain consumed in the UK. Grain alone does not provide a healthy and nutritious diet or meet consumer demand for a varied diet. However, from a purely calorific perspective, the (below average) grain yield in 2020 of 19 million tonnes would be sufficient to sustain the population. It is equivalent to 283kg per person, 0.8 kilos per day. A kilo of wheat provides 3,400 calories (and barley slightly more at 3520 calories), making 0.8 kilos of grain over 2,600 calories, compared to recommended calorie intake of 2 to 2500 for adults. From these figures it is easy to demonstrate that, even without accounting for other domestic products like potatoes, vegetables, grass-fed meat and dairy, and fisheries, current UK grain production alone could meet domestic calorie requirements if it was consumed directly by humans in a limited choice scenario.

Defra currently supports a long-term research platform for the genetic improvement of arable crops and fresh produce. These Genetic Improvement Networks (GINs) aim to improve the productivity, sustainability, resilience, and nutritional quality of UK crops, including wheat, oilseed rape, leafy vegetables, and pulses. This includes significant research to enhance resilience to climate change risks such as drought and heat stress. Overall resilience is supported by trading with a variety of external partners and the UK imports and exports flexibly as production and prices dictate.

Trends

Long term grain production is stable, though the 40% reduction in wheat production in 2020 shows the sensitivity of the sector to unusual weather patterns, and therefore to climate change. Water stress is already a significant factor for wheat yields in southern and eastern England, and is likely to worsen in future, while excess wetness is also expected to rise in the winter season, preventing access to fields for cultivation and sowing.

Indicator 2.1.7 Livestock

Headline

In meat, milk, and eggs, the UK produces a roughly equivalent volume to what it consumes. In 2020 it produced 61kg of meat, 227 litres of milk and 172 eggs per person per year. By value the UK is a net importer of dairy and beef, reflecting consumer preferences for eating higher value products and exporting lower value products.

Context and Rationale

Meat, dairy, and eggs make up an important part of the UK's overall diet and agricultural economy and are areas where the UK is largely self-sufficient in volume. Imports of high value dairy and beef allow consumers their preferred cuts of meat and dairy products. These products are all contributors to a healthy diet, providing important proteins, amino acids, omega oils, vitamins, and minerals such as calcium.

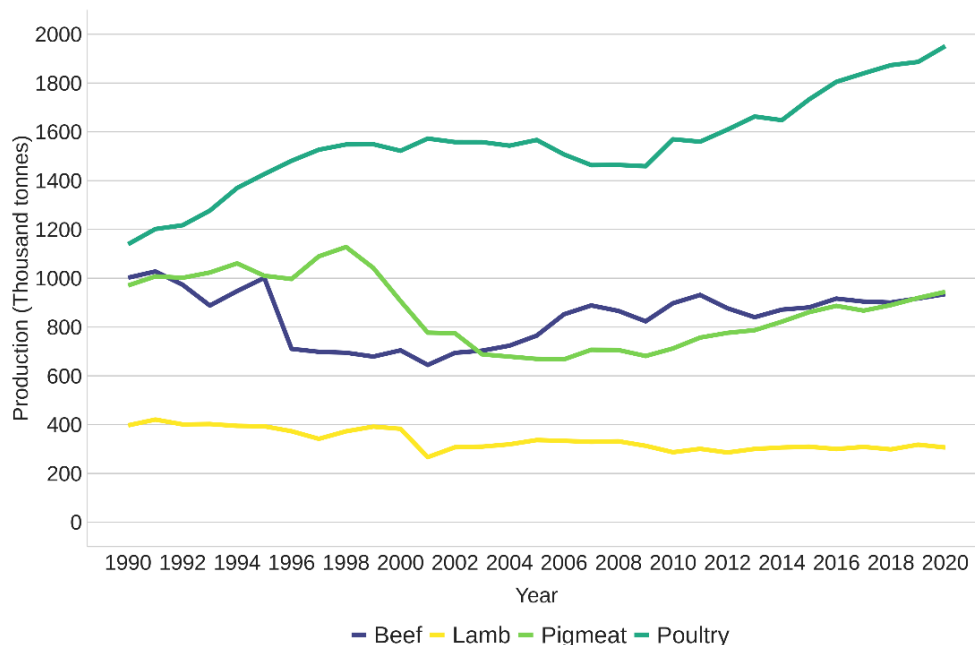
Livestock sectors have higher average greenhouse gas emissions than plant-based products, though the impact of livestock varies greatly depending on the production method. Well-managed livestock can provide benefits like supporting biodiversity, protecting the character of the countryside, generating important

income for rural communities, and contributing to production of other crops as part of rotational systems.

High UK production of animal products partly reflects the large proportion of UK land suited to both extensive and intensive grass production. Grass-based livestock production is often augmented by the feeding of both domestic and imported grain and to a reducing degree imported soyameal, particularly in intensive systems – for example, some dairy, chicken, and pig farms. Animal feed is considered in more detail in the section below on inputs.

Data and Assessment

Figure 2.1.7a: Domestic UK meat production



Source: Defra AUK 2020

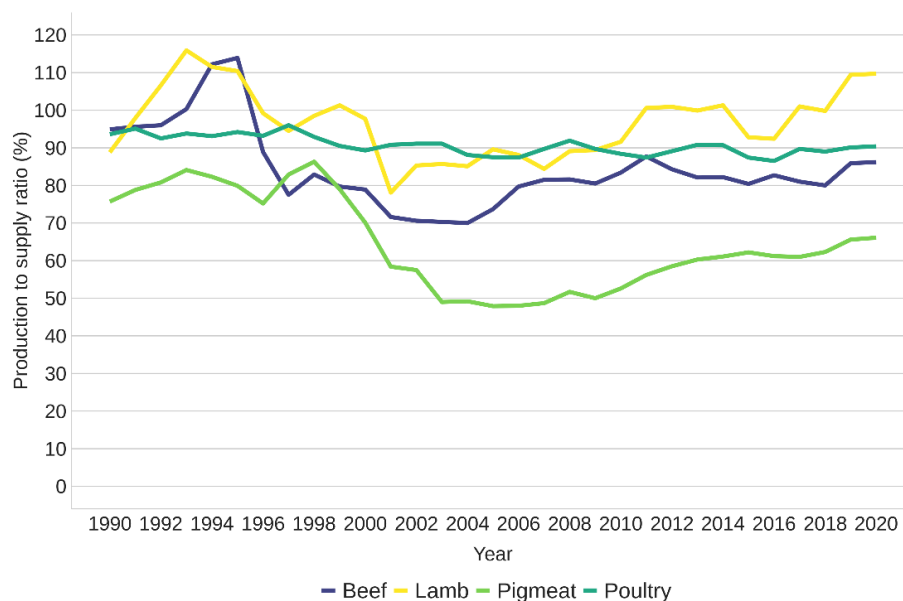
There are noticeable dips in beef production in the mid-1990s and early 2000s, showing the effects of the bovine spongiform encephalopathy (BSE) and foot and mouth crises. An increasing proportion of beef, currently estimated at over 50%, is produced as a by-product of dairy farming, rather than from specialist beef herds. At 1.5 million, the number of beef cows in the national herd is similar to in the 1980s, having peaked at just under 2 million in the late 1990s. This herd supports sales for beef of 2.9 million animals per year, down from 4.5 million in 1980; the numbers sold for beef dropped from 3.8 million to 2.4 million between 1995 to 1996 due to the impact of BSE on sales. Total cattle and calf numbers including beef and dairy have been around 10 million head in June (when the data is collected) for the last 20 years.

Pig and poultry production has increased substantially over the last 12 years, which may reflect higher demand for cheaper meats in more economically challenging times, and greater efficiency in poultry production. Total head count for pigs in June has reduced from 7.8 million in 1980 to 5.1 million in 2020, with a steep decrease of over 3 million between 1998 and 2003; annual sales are around 10 million head. Poultry population for meat in June has doubled from 60 million in 1984 to about 120 million in 2020, with over 1 billion birds sold for meat.

Mutton and lamb production has remained stable throughout this period and while demand has varied, production generally met or exceeded demand over the last decade. Total flock size in June rose from 31.4 million in 1980 to about 45 million throughout the 1990s, then declined again to 32.7 million by 2020; sales per year are at about 15 million head.

For all four species there has been an improvement in yield relative to number of animals.

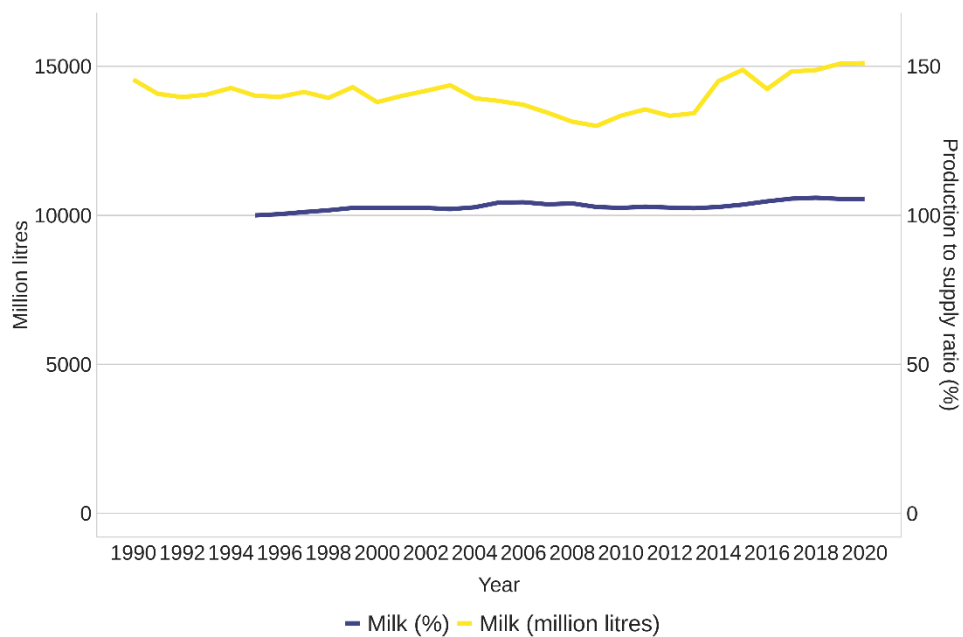
Figure 2.1.7b: Domestic UK meat production as percentage of consumption



Source: Defra AUK 2020

The UK is close to self-sufficient in lamb and poultry. Most beef consumption is also met by domestic production, with imports from the Republic of Ireland making up the bulk of the remainder, though there is some trade reflecting consumer preference for particular cuts. Pigmeat is lowest in terms of self-sufficiency at 66% of consumption. Considering production and percentages of consumption together, it seems overall meat consumption has increased over the period, driven by increased poultry consumption.

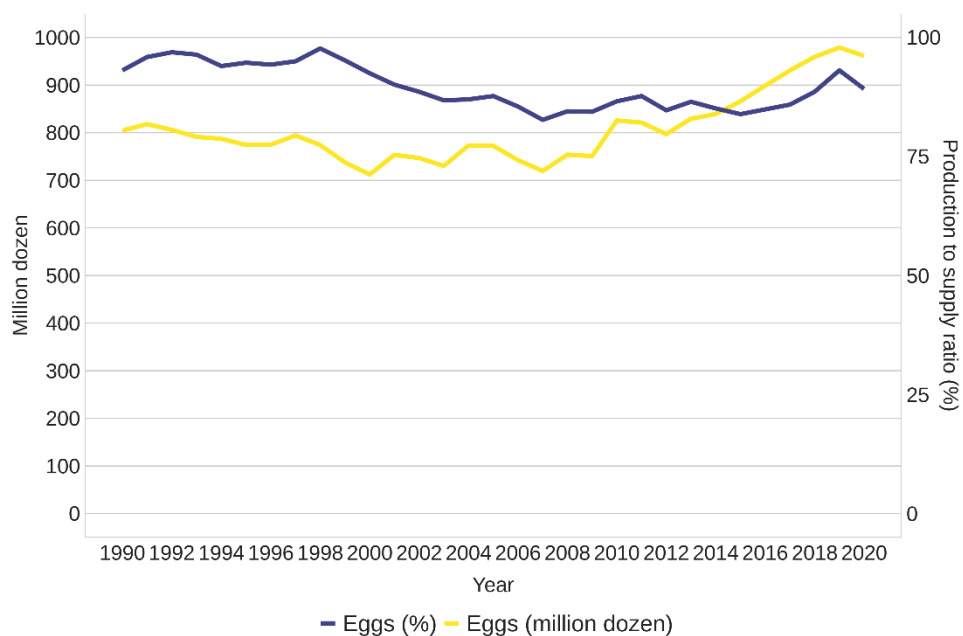
Figure 2.1.7c: Domestic UK raw milk production and consumption



Source: Defra AUK 2020

Raw milk production has held steady and generally exceeded consumption, with a notable rise following the end of milk quotas in March 2015. Herd size has decreased from 3.5 million to 1.9 million since 1973, while yield per animal has more than doubled.

Figure 2.1.7d: Domestic UK egg production and consumption



Source: Defra AUK 2020

Egg production has also been consistent, meeting between 89% and 98% of domestic demand and increasing substantially over the last decade, despite a significant move to free range methods, which now make up about half of production. It is likely that a slight dip in 2020 was caused by the COVID-19 pandemic reducing demand from hospitality and canteens. Although production has increased slightly, laying fowl numbers have decreased from 53 million in 1984 to 40 million in 2020, with the main reduction taking place in the 1980s and 1990s.

Trends

Poultry, pigmeat, and egg production is increasing, while beef, lamb, and milk remains largely stable. The UK now consumes less milk and more eggs relative to production. Changing domestic production is broadly reflected in consumption percentages for beef, pigmeat, and mutton and lamb, with a slight decrease in demand for beef and mutton and lamb in the last two years. Poultry production has increased considerably but is still a smaller percentage of consumption than in 1985, indicating a marked dietary shift towards poultry.

Climate change is projected to cause more than tenfold increases in thermal heat-stress for livestock across the UK. For example, risk of dairy cattle thermal heat stress is projected to increase in the next 30 to 50 years by over 1000% in the South West, the region with the most dairy cattle (see **Theme 2, Indicator 2.3.3, Case Study 2.1.**).

Indicator 2.1.8 Other domestic crops

Headlines

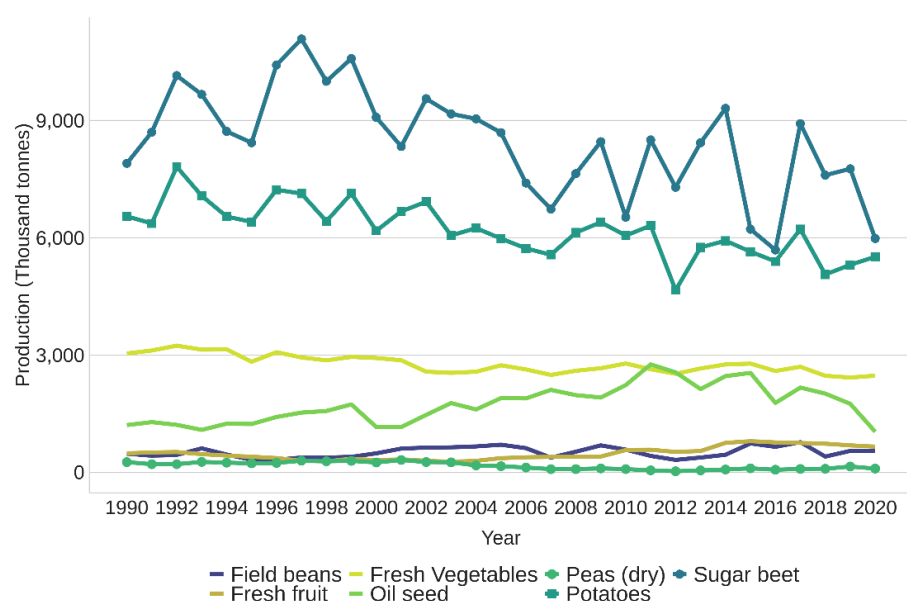
The UK produces a significant proportion of the other domestic crops it needs, including 54% of fresh vegetables, 67% of sugar beet, 71% of potatoes, and 79% of oilseeds, though only 16% of fresh fruit. Apart from a reduction in oilseeds, these proportions have remained stable over the last ten years. Climate change represents a risk to existing production both in terms of making conditions unsuitable for some crops and allowing new pests to proliferate, although it may also benefit new types of crops.

Context and rationale

Cooking oil, sugar, potatoes, other vegetables, and fruit are significant for domestic consumption, with fruit and vegetables particularly important for a healthy diet. Fruit and vegetables are areas where the UK is more dependent on imports, as detailed in **Indicators 2.1.9** and **2.1.10**.

Data and assessment

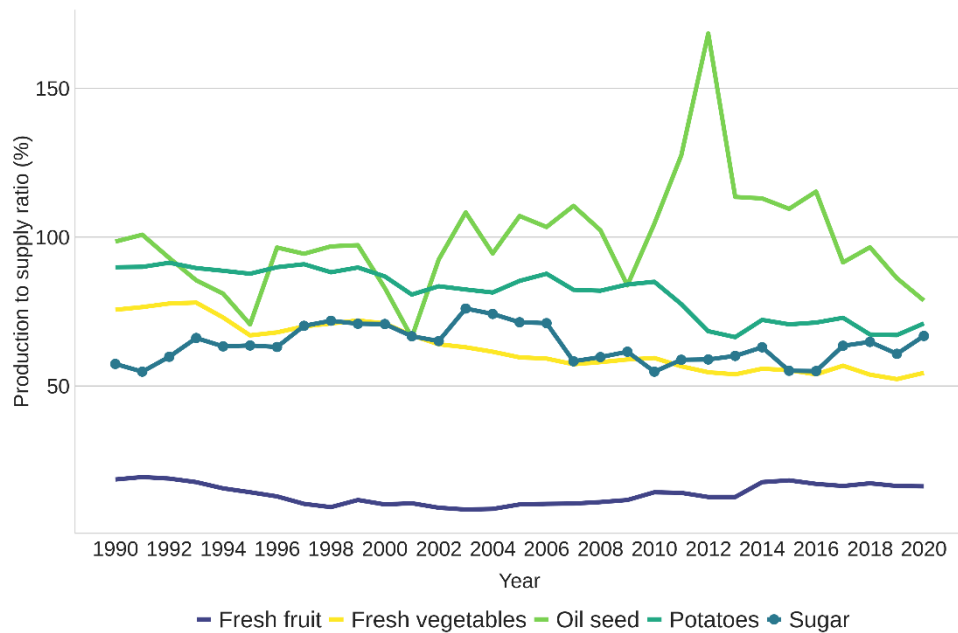
Figure 2.1.8a: Domestic UK production of other crops



Source: Defra AUK 2020

Production of most of these crops is fairly stable. The most noticeable change is a reduction in oilseed production in recent years due to stem flea beetle damage, as discussed under **Indicator 2.1.2**. However, longer-term trends over the last 35 years show that oilseed production is still comparable to the 1990s. Sugar beet trends follow demand from processing factories (dominated by British Sugar (Silver Spoon)), overall down slightly through this period but still higher than in the 1980s, with annual variations due to weather. Sugar beet yields per hectare have improved, suggesting greater production efficiency. Fresh fruit production is small in terms of tonnage and percentage of domestic consumption, but as a crop it is among the most valuable, so should not be underestimated as an economic contributor to the sector. In 2019, horticulture, including potatoes, contributed 17% of farm gate output in value from less than 2% of farmed land.

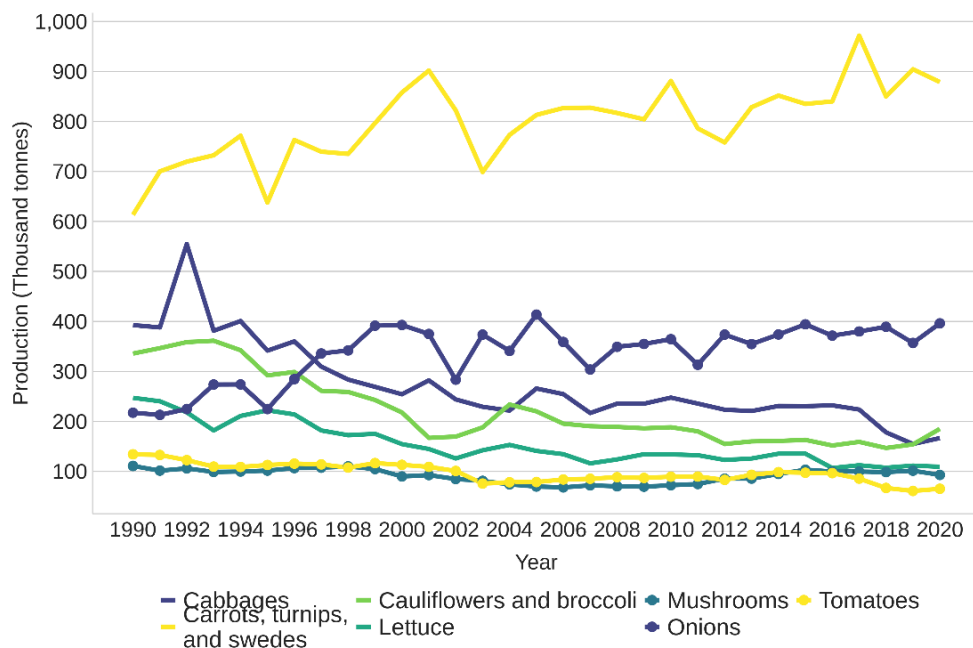
Figure 2.1.8b: Domestic UK production of other crops as percentage of consumption



Source: Defra AUK 2020

Despite the dip in oilseed production, domestic production still fulfils 79% of consumption. Some imported vegetable oils can be linked to tropical deforestation, so there is a risk of offshoring environmental and social harms if domestic production were to reduce further. For sugar beet (63% in 2020), the remaining percentage of sugar demand can vary significantly and is primarily met by imported cane sugar. Potato production to consumption is at 71%. Fresh vegetables are at 54%, and fresh fruit are at 16%, making the UK more reliant on imports for these products.

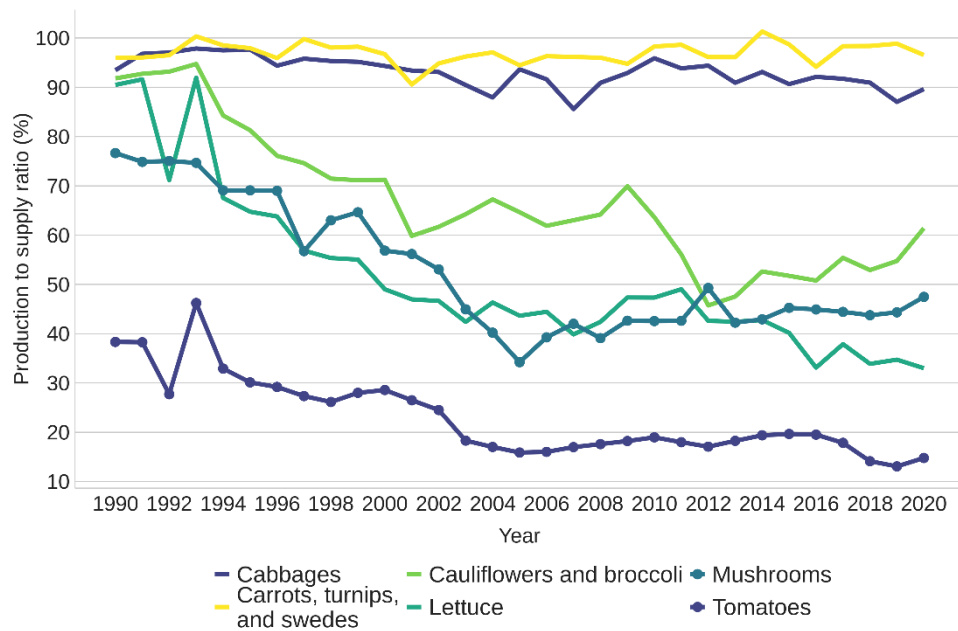
Figure 2.1.8c: Domestic UK production of fresh vegetables



Source: Defra Horticulture Statistics 2020

For field vegetables overall there has been a steady decline in production (down 10%), which varies between crops following consumer tastes. For example, brassica production has halved over this period, but within this category cauliflower production has fallen to approximately a third of 1990 production while broccoli production has nearly tripled over the same period. Production of root crops has increased, notably onions (by 80%) and carrots (by 60%) while turnips and swedes (down 25%) are no longer as much in favour.

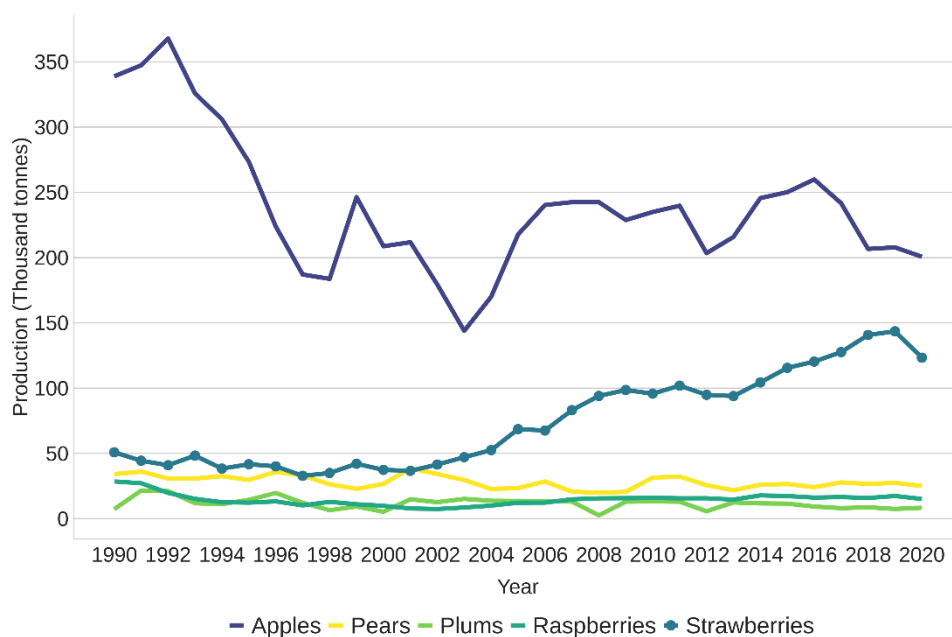
Figure 2.1.8d: Domestic UK production of fresh vegetables as percentage of consumption



Source: Defra Horticulture Statistics 2020

The UK is essentially self-sufficient in root vegetables and cabbage but produces a smaller but rising proportion of other greens, such as cauliflowers and broccoli than in 1990. Domestic fulfilment of demand is also lower for lettuce, mushrooms and especially tomatoes, domestic production of which has halved since 1990. Detailed percentage of consumption data for onions is not available but is believed to be around the 50% mark. Over the last 15 years imports of onions have hovered between about 300,000 tonnes and 400,000 tonnes (with exceptionally high years beyond that in 2013, 2014 and 2019), varying in relation to domestic production.

Figure 2.1.8e: Domestic UK production of fresh fruit

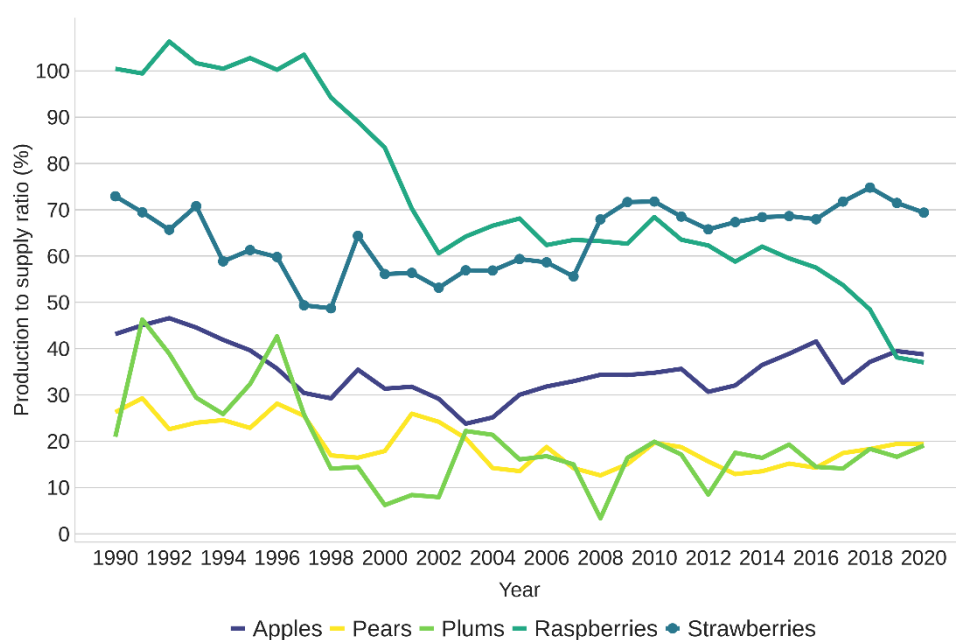


Source: Defra Horticulture Statistics 2020

Total volume of fruit production is more volatile than vegetable production. Fruit production fell in the 1990s but recovered from about 2000 onwards and, with a couple of dips (most likely due to adverse weather) increased slowly up to 2020. Fruit production has doubled in real term value from approximately £0.5bn to £1bn, while production increased from below 300,000 tonnes in the early 2000s to 657,000 tonnes in 2020.

There has been significant change to the variety of apples grown, with a move away from traditional varieties such as Cox's and Discovery to new higher-yielding varieties such as Gala and Braeburn. Apple production has increased during a period when the production area has nearly halved. For soft fruits, strawberry production has more than doubled due to new varieties and longer growing seasons and partly due to innovations like LED lighting and table-top production. Raspberry production has almost halved, blackcurrant production is stable, and overall production of other soft fruit not covered in the chart has nearly doubled.

Figure 2.1.8f: Domestic UK production of fresh fruit as percentage of consumption



Source: Defra Horticulture Statistics 2020

Demand for soft fruit has increased, with the domestic strawberry supply to use ratio similar to 1990 despite production being two to three times greater. Raspberry demand also grew slightly despite a reduction in domestic production, bringing the supply ratio down sharply from 100% to 40%. Supply ratios for apples, pears and plums is more consistent, and reflects trends in production year on year.

Trends

Changing and extreme weather will have varied effects on different crops. Potato yields are vulnerable to hot dry summers, as the 20% fall in the 2018 harvest shows, but other new crops like red wine grapes are already benefitting from changing weather patterns. A related risk is of imported pests and diseases; Plant Health checks at borders are already important and will become more so as climate changes expose the UK to new threats of this kind. The changing UK climate will likely alter the emergence, survival rates, and spread of both indigenous and invasive pests, weeds, and diseases (see **Indicators 2.3.3** and **2.3.4**).

Indicator 2.1.9 Supply sources of UK fresh fruit and vegetable imports

Headlines

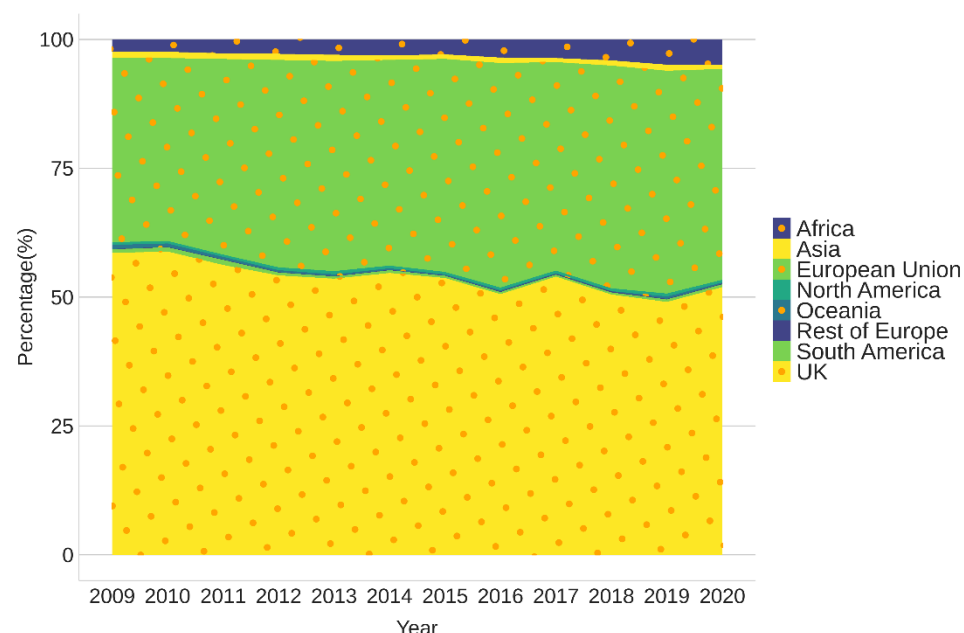
The UK produces over 50% of vegetables consumed domestically, but only 16% of fruit. In 2020, 93% of domestic consumption of fresh vegetables was fulfilled by domestic and EU production, while fruit supply was more widely spread across the EU, Africa, the Americas, and the UK.

Context and rationale

The UK has a high dependency on FFV, so monitoring the diversity of supply is necessary to ensure supply routes are adequate. Many imported products (tomatoes, courgettes, and oranges for example) are part of the regular diet of UK consumers, so are important for nutritional value and consumer choice.

Data and assessment

Figure 2.1.9a: Origins of fresh vegetables in UK domestic consumption

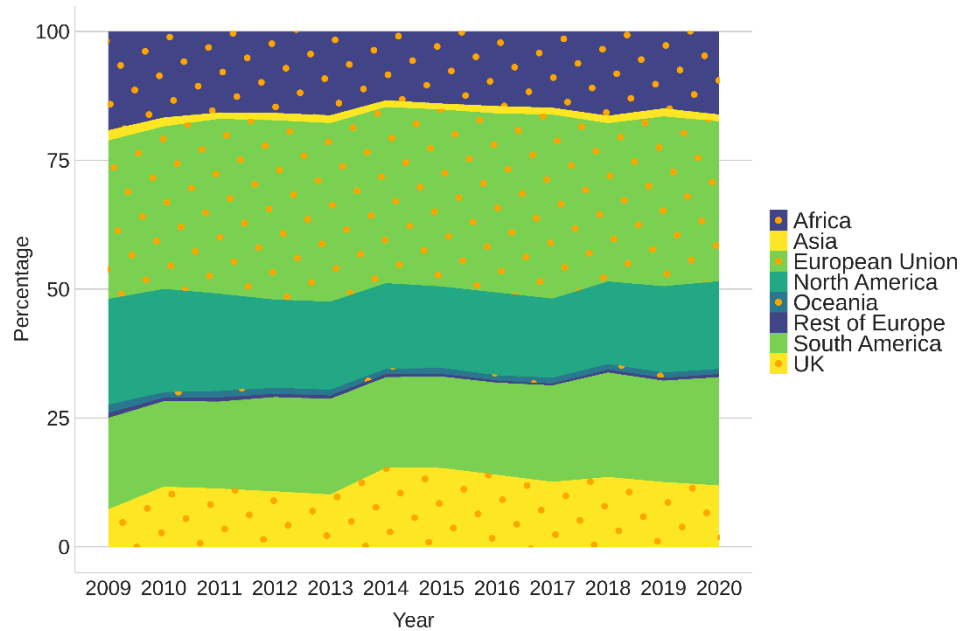


Source: HMRC

93% of domestic consumption of fresh vegetables was fulfilled by domestic and EU production, reflecting the importance of geographical proximity for importing fresh produce of relatively low value. UK production to consumption has declined

slightly over the last decade, while reliance on EU and African supply sources has increased.

Figure 2.1.9b: Origins of fresh fruit in UK domestic consumption



Source: HMRC

Origin of fresh fruit consumption is more diverse, with 97% by volume from the UK, EU, South America, North America, and Africa. This reflects UK consumer demand for tropical and out-of-season fruit which cannot be sourced domestically or from Europe. UK production to consumption has increased a little since 2009 but remains low.

Trends

There are concerns about water availability for fruit and vegetable production in many of the countries on which the UK currently depends, for example in the Mediterranean region.⁵⁰ The spread of plant diseases could also be significant for fruit and vegetable imports. For example, diseases such as Fusarium wilt (Panama TR4) could significantly affect the future availability of bananas in the UK and worldwide. While this might not impact directly on food security, the disruption of supply chains for staple foods such as bananas could have a serious impact on consumer confidence and trust.

⁵⁰ WRAP, 'Working together to protect critical water resources'

Indicator 2.1.10 Seasonality

Headlines

The relationship of supply to the time of year is complex and depends on the product. The UK has diverse supply lines to meet demand throughout the year.

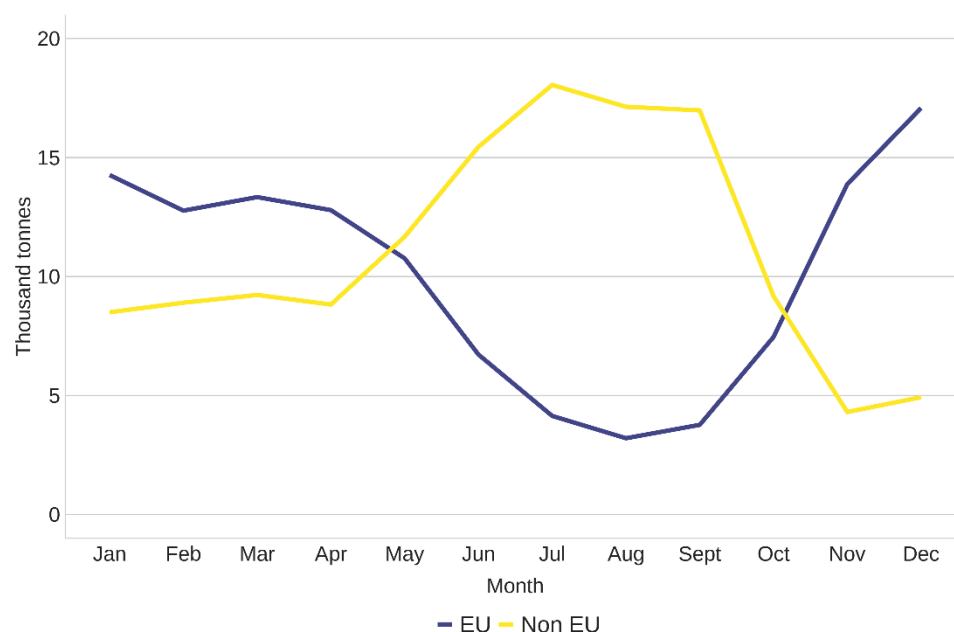
Context and rationale

Seasonality varies with product, growing season, and growing method, and is important for understanding how the UK's fresh fruit and vegetable (FFV) supply changes during the year. Domestic production is concentrated in the summer months, particularly for higher value crops like berries.

There is year-round FFV production in the UK, but winter crops are more limited in range, being dominated by root vegetables and leafy greens. In winter months the UK is particularly dependent on imports to keep supermarkets stocked with diverse out-of-season FFV. Over the last thirty years consumer preferences have developed, favouring more ingredients which cannot be grown in the UK and expecting access to out-of-season fruit all year round.

Data and assessment

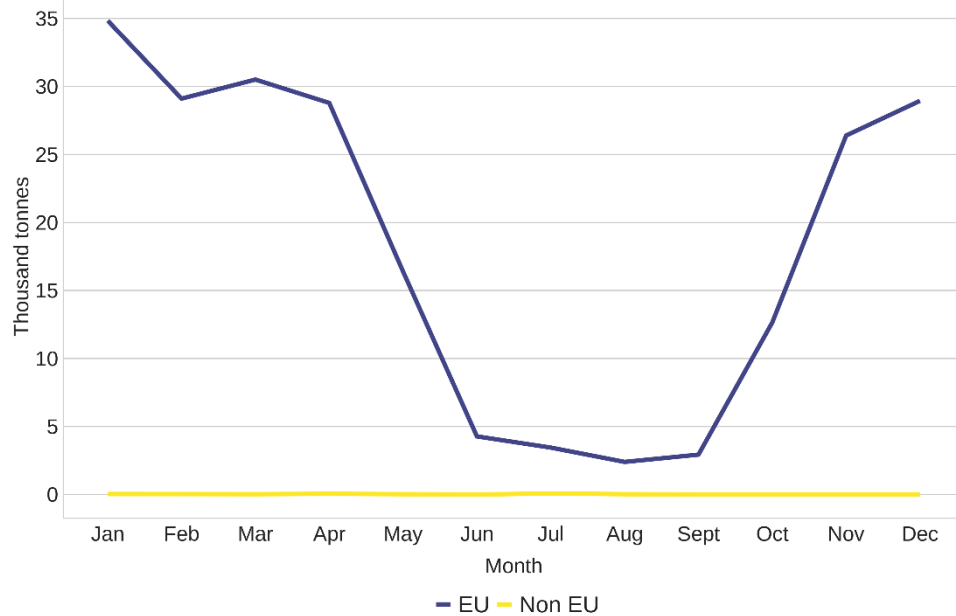
Figure 2.1.10a: UK citrus fruit imports seasonal variation



Source: HMRC

Citrus fruit imports reflect global harvest seasons, which are generally in winter months, so EU imports are highest in the UK winter when produce comes from the Mediterranean countries. In the UK summer, imports are sourced from the southern hemisphere, especially South Africa.

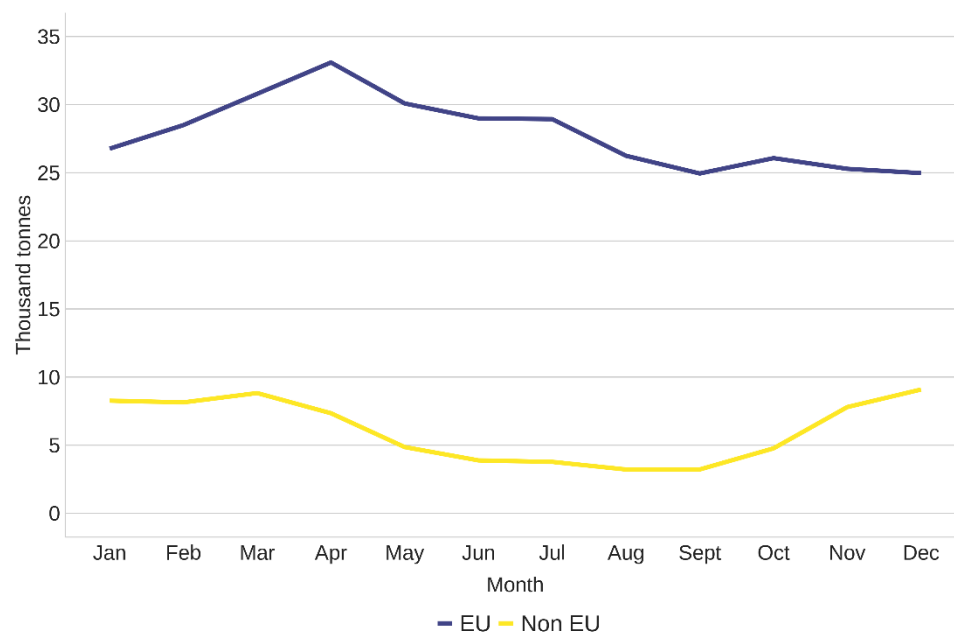
Figure 2.1.10b: UK lettuce imports seasonal variation



Source: HMRC

Other seasonal effects for some products reflect the UK growing season. Imports of lettuce come almost exclusively from the EU during the autumn and winter, whilst domestic production reduces trade in the spring and summer, as shown in the large dip in imports during those months.

Figure 2.1.10c: UK tomato imports seasonal variation



Source: HMRC

For many products seasonality is less marked. For example, tomatoes can be produced year-round, including in greenhouses in the UK but domestic production capacity is far below total demand and is supplemented throughout the year by imports.

Trends

The UK continues to rely on seasonal supplies of some products in order to meet consumer demand, particularly fresh fruit and vegetables. The seasonality of supplies can be driven by a number of factors, including global and domestic production seasons. The examples presented above show that the EU has previously been an important source of supply for those products for much of the year. It is not yet apparent whether UK supply chains have changed permanently after 31 December 2020. Future Food Security Reports will note if there has been a change in the balance of EU and non-EU imports.

Year-round access to a full range of FFV in all seasons has increased over the last 20 to 30 years, leading to longer and more complex supply chains, alongside a drop in domestic supply ratio of fresh vegetables from 76% to 54% since 1990 (see **Indicator 2.1.8**).

Indicator 2.1.11 Fish

Headlines

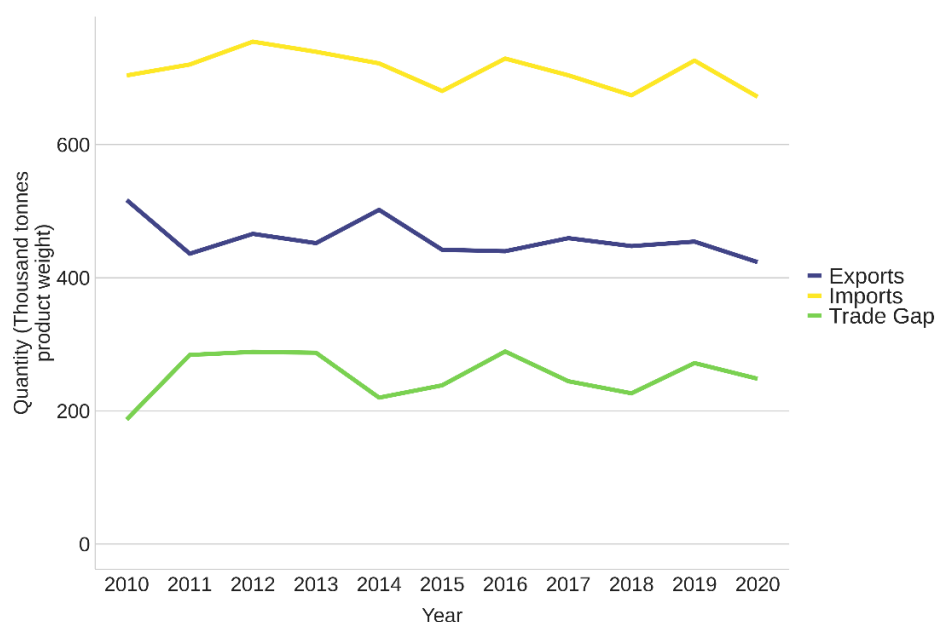
The UK is a net importer of fish, and heavily dependent on imports for the types of fish consumers prefer, as these are different to the main types caught domestically. Fisheries in general are threatened by overfishing and climate change, but most of the fisheries which export to the UK are sustainably managed and have healthy stocks.

Context and rationale

Fish represent a small but significant part of UK production and consumption. The picture of UK imports and exports is complicated by the fact the consumption of fish in the UK is dominated by non-native species, so much of the UK's catch is exported and fish for domestic consumption are imported instead.

Data and assessment

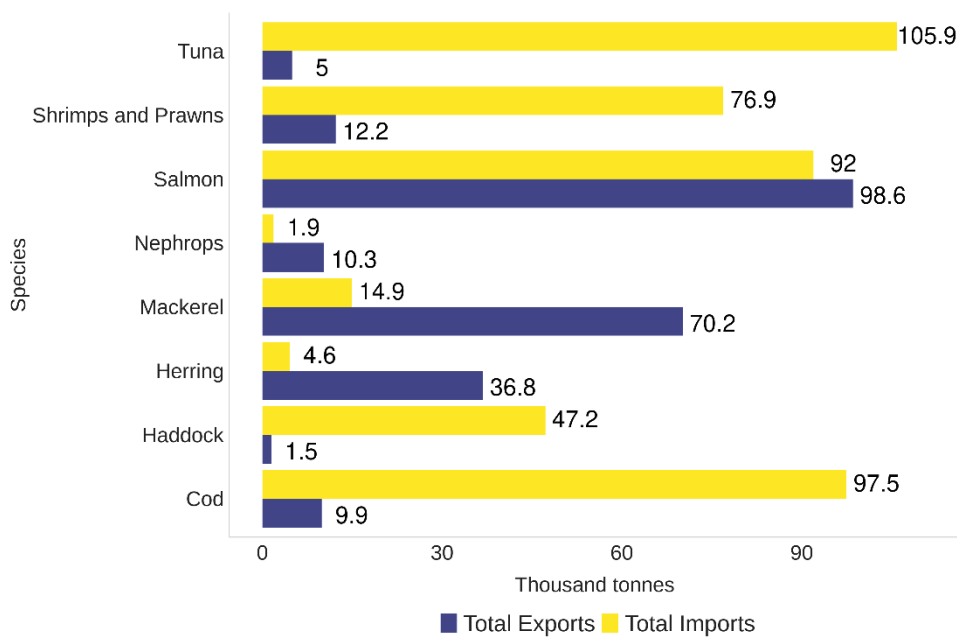
Figure 2.1.11a: UK fish imports and exports by weight



Source: HMRC

The UK exports around 452,000 tonnes and imports around 721,000 tonnes of fish globally. The UK is a net importer with imports exceeding exports by 269,000 tonnes (the trade gap).

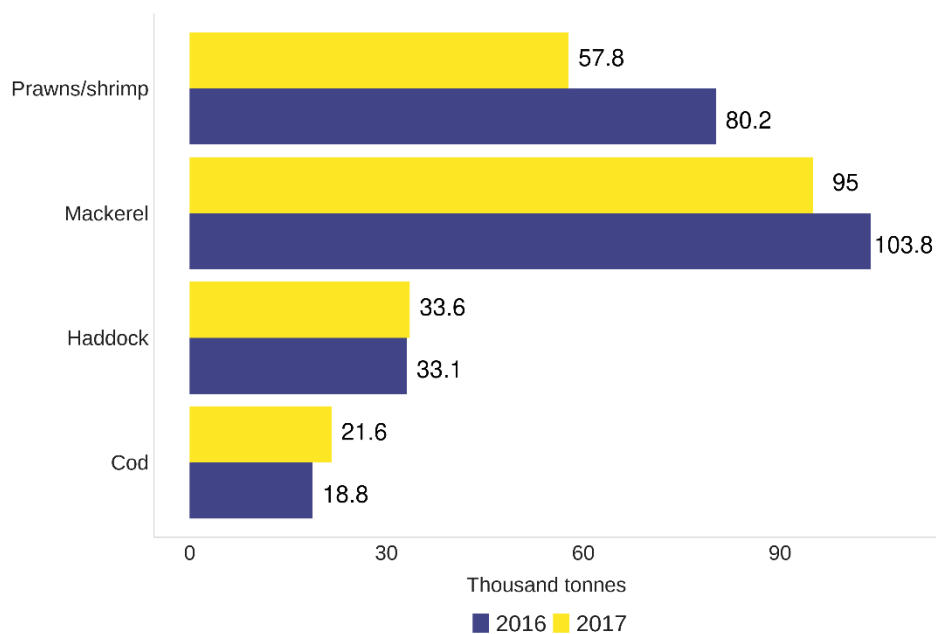
Figure 2.1.11b: UK fish imports and exports by species 2020



Source: HMRC

The UK relies on imports to meet domestic demand, especially for cod, haddock, tuna, and shrimp and prawns but is a net exporter of herring, mackerel, salmon, nephrops (langoustines), and scallops. Salmon is the only species which is both imported and exported in significant quantities.

Figure 2.1.11c: Domestic production of wild fish native to UK waters



Source: Seafish

Domestic fish yields of four main species fished and consumed in Britain can vary significantly year-to-year, as a snapshot of 2016 and 2017 shows (this data is older than the import and export data, but allows a reasonable comparison). Compared with figure 2.1.11b, showing imports and exports, it is apparent that the UK produces only a small amount of the cod it consumes, and less than half of haddock consumption also. A surplus of mackerel beyond domestic needs is exported, while shrimp and prawns are caught domestically and imported in similar volumes. During the Covid-19 pandemic industry-led initiatives to link buyers with the UK fleet led to an increase in availability of British-caught fish in some supermarkets; sales of (primarily imported) canned and frozen fish increased.

Figure 2.1.11d: UK fish imports by country 2019

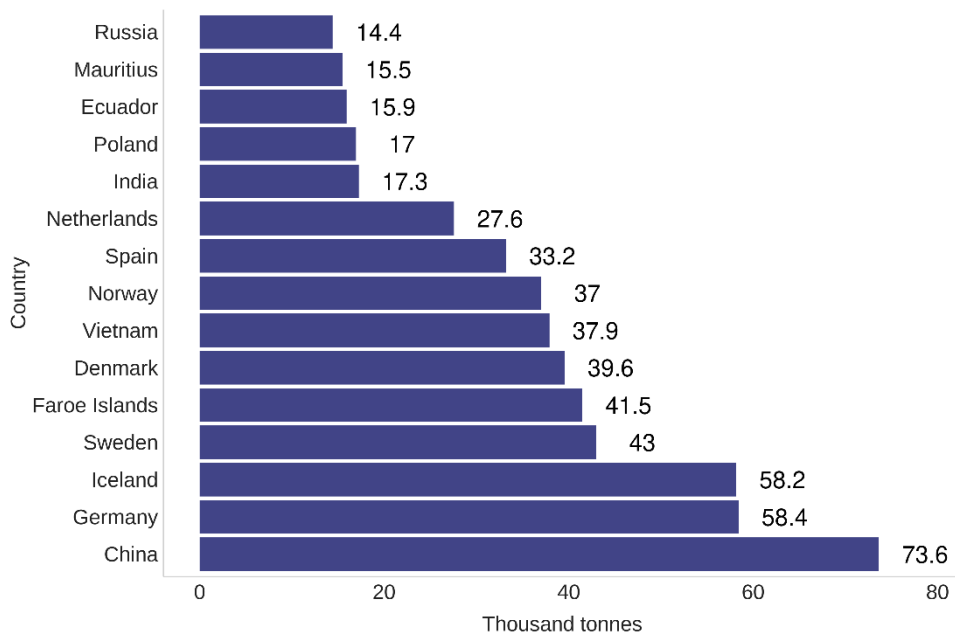
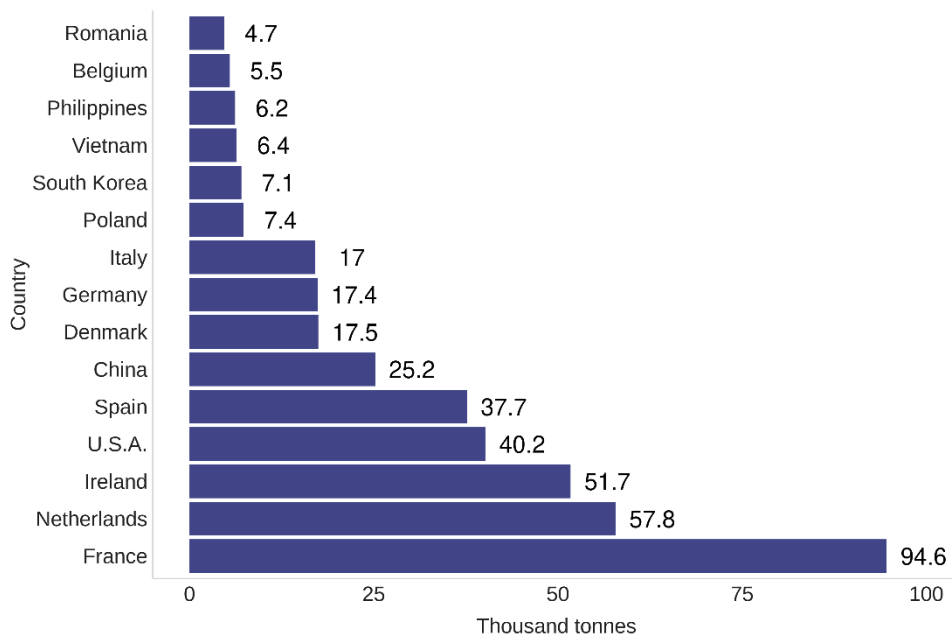


Figure 2.1.11e: UK fish exports by country 2019



Source: HMRC

EU countries are the largest export market, followed by the US and China (a key processing hub), while China and the UK's North Sea neighbours are the main sources of fish imports. A shift in diet to more locally sourced fish and shellfish would make the UK more self-sufficient in marine protein. However, from a food security perspective, having strong trade links and a diversity of supply is beneficial.

Trends

There are risks to fishing and marine sustainability from overfishing. Continuing international management of stocks and quota is necessary – for example, any unilateral increase in quota by other nations has a direct impact on food security for the UK nations who also fish in those sectors. A summary of stock health by species for the UK's main sources is as follows (as of 2017) – note salmon and warm water prawns are primarily farmed, so not included:⁵¹

- Cod (Iceland, Norway): healthy
- Haddock (UK, Iceland): variable but healthy, with UK stocks now being managed sustainably.
- Skipjack tuna (Mauritius, Ecuador, Seychelles, Philippines, Ghana): healthy and underexploited. Note that other species of tuna (making up about 7% of

⁵¹ Seafish, 'Market insight reports', [REDACTED]

UK tuna imports) are often overfished, with illegal, unregulated, and unreported catch.

- Cold water prawns (Canada and Greenland): variable stocks but managed stably.
- Mackerel (UK, North Sea nations): stocks good but trend uncertain.

Climate change presents a separate risk. The Climate Change Committee's Independent Assessment of UK Climate Risk projects warming of 0.2-0.4°C per decade to 2100 and beyond in the shallow shelf seas around the UK, particularly in the English Channel and southern North Sea. Warming seas, ocean acidification, and changes in salinity impact the entire marine biosphere and food chain on which commercial fishing depends. Fish farms face separate climate-related risks.

Climate change impacts are projected to include range shifts, decline in fish stock recruitment for species such as cod and herring, and risk of passing critical temperature thresholds for salmonid populations including Atlantic salmon, Arctic charr, and brown trout. Climate change impacts are also likely to impact abundance, distribution, and nutritional quality of prey species, which can indirectly affect commercially valuable fish stocks (for example cod). Climate change impacts can also increase risk and prevalence of pests and pathogens, potentially reducing quality and survivability of targeted fish species. Changing conditions can encourage the presence of invasive species (such as Pacific oysters), creating increased competition for resources for native fisheries.

However, there may also opportunities for increases in warmer water species like mackerel, anchovies, and sardines. Under the Fisheries Act 2020, the UK is committed to fishing within sustainable limits, avoiding wasteful bycatch and supporting marine ecosystems. A climate change objective in the Act aims to encourage management policies to mitigate against the effects of climate change.

Indicator 2.2.1 Essential inputs

Headlines

The cost of inputs varies year to year and is a significant risk to farming economies due to the narrow margins on which they operate – and therefore to food security. Out of £26.7 billion gross agricultural output in 2020, £17.3 billion was spent on 'intermediate consumption' (costs and inputs). In 2020, seeds cost UK farmers £922m, fertilisers £1,147m, energy and fuel £1,290m, pesticides £1,097m, and animal feed £5,586 million. Animal feed is both the most expensive input across the entire sector and the one for which prices fluctuate most.

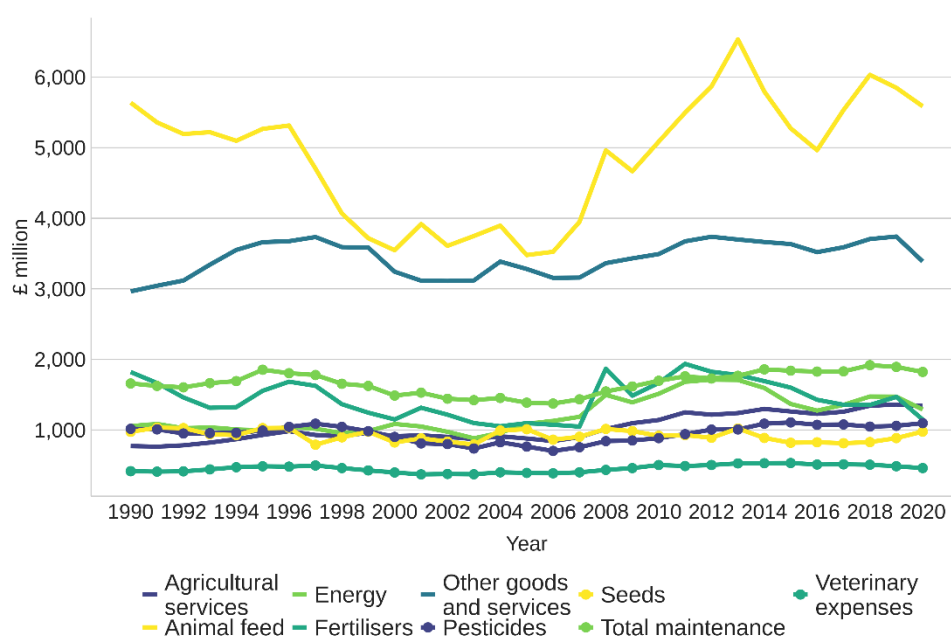
Context and rationale

Production of food requires several essential inputs. For crops these include natural and chemical fertilisers, pesticides, and seeds for crops, vegetables, and pasture leys. Animal feed is required for livestock production, from direct grazing, farm-grown fodder, or through buying in feed. Feed varies in cost and environmental impact from locally grown hay and silage, to UK-grown grain, and to imports of grain and soyameal. These inputs all represent significant costs to farmers. Reducing them while maintaining yields is desirable from an economic and environmental point of view.

Soil and water are the most important inputs of all for primary food production. They have already been discussed in a global context in **Theme 1** and will be further addressed in the **Sustainability and Environment (2.3)** section of this chapter, along with biodiversity-related ecosystem services which are also essential to food production. Labour and energy, two other key inputs, are discussed in **Theme 3**.

Data and assessment

Figure 2.2.1a: UK principal farm costs



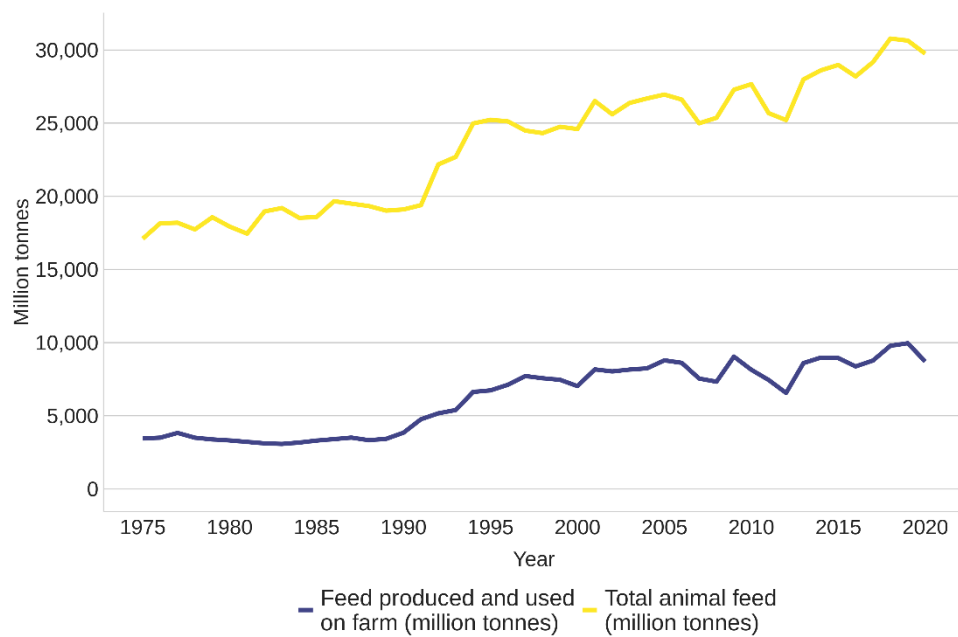
Source: Defra AUK 2020

Animal feed is the single largest input cost for UK agriculture, with 30 million tonnes costing livestock farmers £5.6 billion in 2020. Fertiliser costs were £1.1 billion in 2020, the lowest since 2007 and reflected low oil prices as well as the reduced capacity of farmers to grow wheat in 2020. Fertiliser prices are volatile,

being subject to global production and markets and dependent on production inputs like natural gas. Application levels of mineral fertilisers are affected annually by price of fertiliser and crops, crop type, and weather, with oil prices particularly affecting costs. The total cost of agricultural pesticide products was over £1 billion in 2020.

Seeds are another of the main expenses in crop production. Costs in 2020 were abnormally high due to weather conditions preventing autumn sowing and winter crops failing and being resown in spring. Seeds are required for planting crops and re-sowing grassland in rotations and are typically purchased from specialist suppliers (especially for higher value crops). Much of the required vegetable seed is imported, as are some young plants for propagation, for example tomato plants. Seed saving remains a small but important part of the UK’s food production and security, varying with production and market demands.

Figure 2.2.1b: UK animal feed



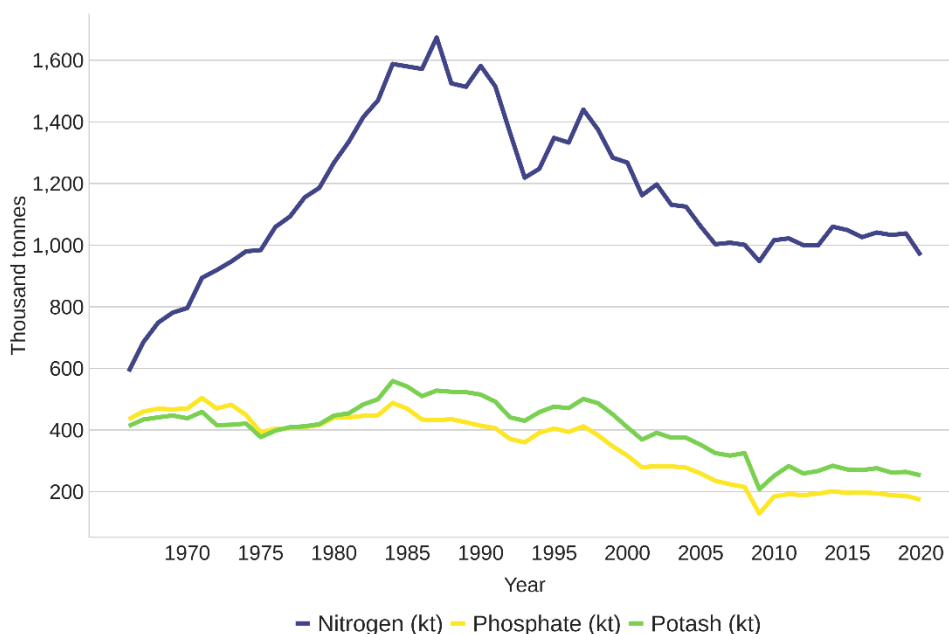
Source: Defra AUK 2020

Animal feed is the most important input for livestock production. It can be grown on farm or bought in as grain, protein crops (for example beans and soya), or grass in the form of hay, silage, or haylage. As highlighted in indicator 2.1.6 on grain production, 11.9 million tonnes, over 60% of UK grain, was used for animal feed in 2020, making up 40% of total animal feed. Dependency on grain is reduced where grazing livestock have access to grassland (including in all-grass systems) and is affected by annual fluctuations in the growth of such forage due to weather and climate.

Total feed use increased in the 1990s and continues to climb, now about 76% higher than in the mid-1970s and 50% higher than the early 1990s and correlates only a little with price changes (for example in 200 to 2008 and 2011 to 2012) – as livestock need feeding regardless of cost. Over the same period most livestock outputs have remained stable, though there has been intensification, for example in milk production, where 24% fewer cows now produce 9% more milk than in 2020. Production of poultry and eggs have also increased. Comparing the 2020 cost of feed (£5.6 billion) with the £13.8 billion combined value of livestock production it is clear that livestock production remains vulnerable to changes in feed prices, for example through competition with energy crops, poor harvests, and global competition for grain. In 2020, £2.5 billion of animal feed was imported, and £1.1 billion exported, about 60% of both with EU countries. This means net dependency on imports is about 25% of total feed cost but actual use of feed imports is closer to 45%.

In terms of land and energy use, there is also an opportunity cost when feeding these calories to animals rather than directly to humans, considering a substantial proportion are cereals and other high protein and energy crops. Reducing their use as feed crops would free up land and resources for other land uses. However, animal feed can play a role in making use of surplus foodstuffs that would otherwise be wasted. There may also be opportunities for novel feedstuffs for animals that could be more efficient, such as insect protein.

Figure 2.2.1c: Fertiliser use in UK agriculture 1966-2020



Source: British Survey of Fertiliser Practice

Plant growth requires three main elements: nitrogen, phosphorous (commonly in the form of phosphate), and potassium (commonly in the form of potash). The use of these elements for agriculture, in the form of fertilisers, peaked in the mid-1980s following a rapid increase in use in the 1960s and 1970s of nitrogen and steady increase of the others. Use of all reduced between 1990 and 2010 but has been fairly steady over the last decade. In 2020, overall fertiliser application rates reduced by an estimated 6.2% due primarily to increased spring sowing, which uses less fertiliser.

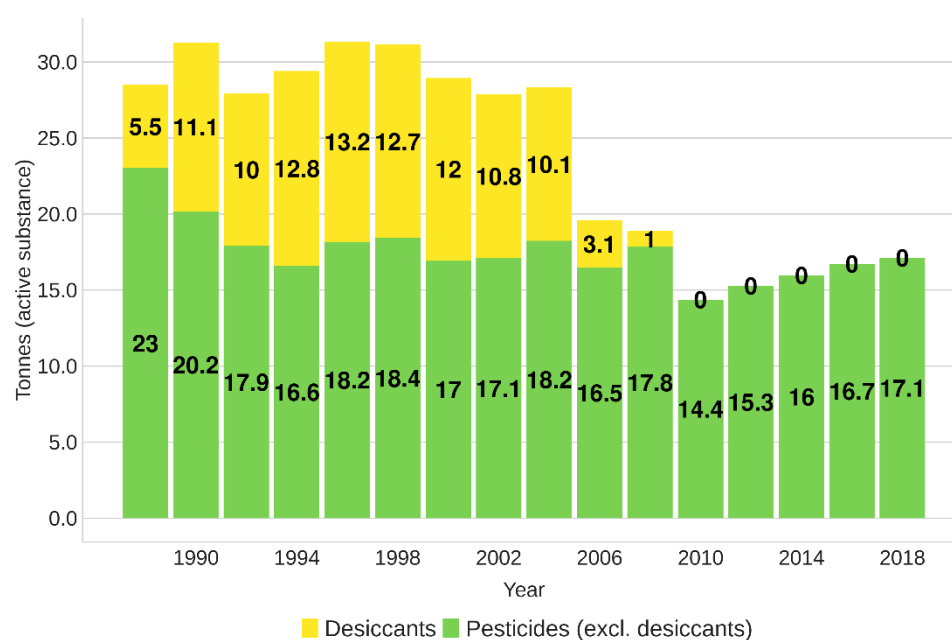
Inorganic fertilisers, especially ammonium nitrate for nitrogen, are often imported, so global availability of the key minerals is an important factor, as covered in **Theme 1**. Organic fertilisers (primarily manure) make up just under half of nitrogen applications and are typically sourced on farm in mixed holdings, or from other local sources.⁵² Generally speaking, manures are more often used on grassland and inorganic fertilisers on crops.

The UK imports roughly 50% of its ammonium nitrate, with 75% of imports for fertiliser use coming from the EU (primarily from Lithuania, Poland, and the Netherlands) and the remaining 25% from Georgia and Russia. If the only UK manufacturer were to close, demand for imports would increase. Dependency on other suppliers like Russia or China is only likely to occur if EU suppliers could not increase their supply to the UK. There are also alternative nitrogen-based fertilisers that could potentially be used. More than 90% of the UK's total Calcium Ammonium Nitrate and Urea Ammonium Nitrate supply is imported from the EU, while only about 40% of Urea arrives from the EU. Urea imports from outside the EU are currently sourced from Algeria, Russia, and Egypt, with supplies also coming from Belarus and Bahrain. Importing ammonium nitrate requires specialist port facilities due to its explosive nature, so an issue at a major port could be challenging (see further discussion of port substitutability in **Theme 3**).

Fertilisers have the potential to cause environmental damage to water and air quality as well as contributing to climate change through nitrous oxide emissions. These effects can be exacerbated and mitigated by application method and rate.

⁵² Defra, 'Soil nutrient balances UK, 2020', <https://www.gov.uk/government/statistics/uk-and-england-soil-nutrient-balances-2020/soil-nutrient-balances-uk-2020-statistics-notice>.

Figure 2.2.1d: Pesticide use on cereals, Great Britain and UK



Source: Defra. Figures from 2010 onwards include Northern Ireland, prior to that coverage is GB only. 2018 figure for pesticides does not exclude desiccants.

Pesticides (or ‘plant protection products’) are used to protect crops from a variety of plant, fungal, and animal pests that can affect yields. Application volume can vary year to year depending primarily on pest, disease, and weed incidence, and is also influenced by the weather at key crop development stages when pesticide applications are most often made. There is significant variation crop to crop, but approximately 90% of pesticides used in agriculture are applied to arable crops.

The weight of pesticides used reduced from 1990 to 2010, largely down to declines in the use of sulphuric acid as a desiccant on potatoes. Since 2010 it has gradually increased, but the weight applied remains lower than pre-2010 levels. Since 1998, when the relevant data collection began, the frequency of pesticide application and the number of active substances applied has increased. For arable crops the average number of spray rounds has increased from 4.8 in 2000 to 6.2 in 2018, with the average number of active substances applied rising from 11.6 to 16.7 over the same period. This translates into increases in the total area treated (which represents the area multiplied by number of treatments made). This is partly driven by greater use of mixtures of products in spray tanks to overcome challenges around resistance.

Pesticides are subject to regulatory controls which may alter the way in which products are permitted to be used (range of crops, frequency, or rate of application). Such changes usually reflect post-registration concerns arising from unforeseen environmental effects (for example the impact of neonicotinoid insecticides on bee behaviour and survival) or operator and consumer exposure.

The use of pesticides can have direct and indirect effects on soil health, water quality, and biodiversity.

Trends

Seed supply is generally resilient in the sense that additional seed can be sourced from stocks held by suppliers. In future, seed that provides resilience to the changing climate will be needed.

Feed volumes used continue to rise steadily while the price per tonne is falling slowly (in real terms). The use of grain and imported soya for livestock feed may question about the environmental sustainability of this practice, including substantial resource use in the UK and abroad, and a risk of exporting harms.

Changing weather patterns and climate will impact nutrient cycles with implications for fertiliser application patterns. Lower oil prices have made fertilisers cheaper in recent years, but sudden fuel price increases can lead to production halting at short notice, as experienced with gas in autumn 2021 (see **Theme 3**).

Tensions between environmental protection and crop yields are likely to increase as climate change fuels warmer and damper conditions that are more likely to encourage disease and pests, like potato blight and peach-potato aphids. Climate change will also likely change pesticide use and impacts through changing temperatures and rainfall patterns.

Indicator 2.2.2 Agriculture and supply chain waste

Headlines

Food waste in agriculture and in the supply chain is an economic and environmental loss, as well as being a factor in understanding overall domestic production and efficiency, and therefore food security. It represents unnecessary land and resource use, millions of tonnes of carbon emissions, and billions of pounds of wasted value.

Estimated annual combined surplus and waste in primary production is 3.6 million tonnes (Mt), 6-7% of total harvest. Waste post-farm gate is estimated at 9.5Mt, of which 7.7Mt is in households and hospitality and 1.8Mt in manufacturing and

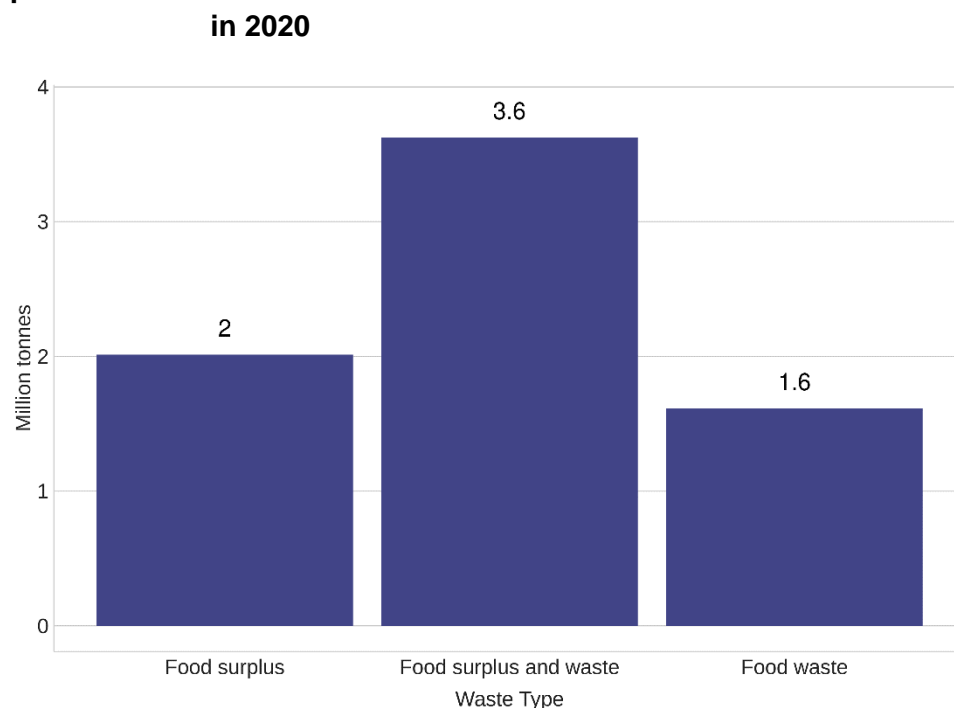
retail. These figures compare to around 43Mt of food purchased for consumption in the UK.

Context and rationale

The Waste and Resources Action Programme (WRAP) is a charity established in 2000 which works on reducing food, clothing, and packaging waste, recycling, and improving the entire lifecycle of food consumed in the UK. WRAP monitors food waste throughout the supply chain and has produced several reports on which the main indicators here are based. It should be noted that whilst the UK evidence base on food waste has been recognised as one of the strongest in the world, there remain significant uncertainties associated with the data. The quality of data varies by sector, in order of robustness from households and retail (both relatively accurate), to manufacture and hospitality and food service (relatively weak) and primary production (weak, and partly modelled using non-UK data).⁵³

Data and assessment

Figure 2.2.2a: Central estimate for annual food waste and surplus in UK primary production



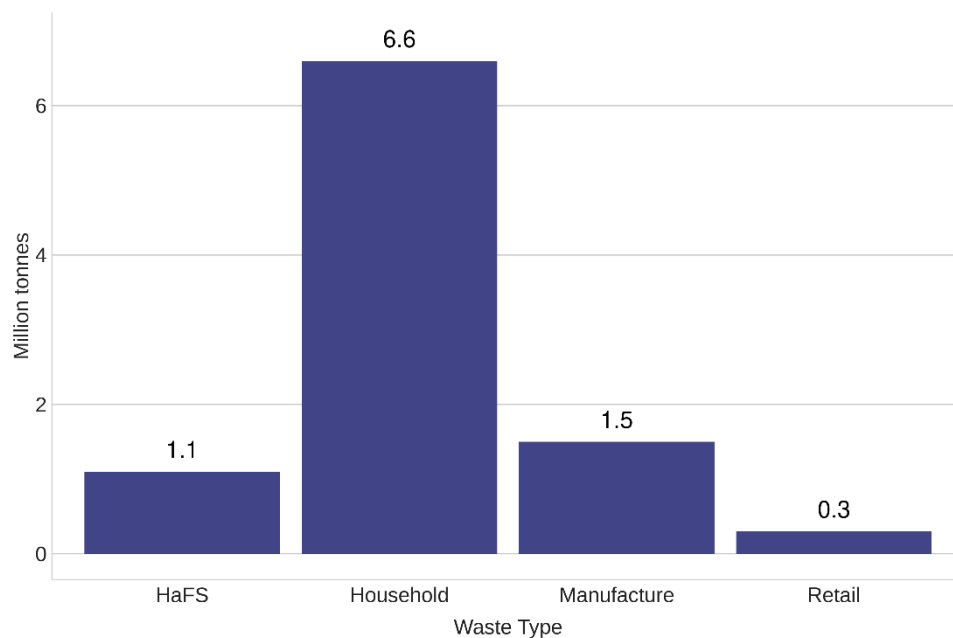
⁵³ Further information on progress in reducing food waste and details on interventions with that aim, as well as water use and other issues, can be found on the WRAP website, for example on UK food surplus and waste

and updates on the food waste reduction roadmap

Source: WRAP: Food waste in primary production in the UK

Surplus and waste in primary production compares to approximately 55 million tonnes total UK food production in 2020, making it about 6-7% of production. A distinction is made between food waste (1.6Mt) and surplus food (2Mt), which rather than reaching its intended market is instead redistributed, becomes animal feed or goes into bio-based materials. Food waste in primary production is hard to estimate, and there is no definitive data. WRAP's estimates are based on applying the 'best available data' from comparable geographies around the world to UK production quantities. As a result, there is a wide possible range, from 2.2Mt to 5.0Mt. Based on the central estimate of 3.6Mt, up to £1.2 billion value of food is lost, of which part is recovered in sales for animal feed.

Figure 2.2.2b: Post farmgate food waste arising in the UK in 2018 by sector



Source: WRAP: Food surplus and waste in the UK

The 9.5Mt of food wasted annually post-farmgate compares to 43Mt of food purchased for consumption in the UK, and has a value estimated at over £19 billion, primarily in household waste. However, only 70% of that was intended for consumption, with 30% the 'inedible parts' (fruit and vegetable peelings etc). Between farm and fork, 1.5Mt are wasted in manufacture (0.7Mt of which is 'inedible parts'), 1.1Mt in hospitality and food service (HaFS), and 0.3Mt in retail. Around 0.7Mt of food surplus from manufacturing, retail, and hospitality and food

service is either redistributed via charitable and commercial routes or diverted to produce animal feed (up about 10% since 2015).⁵⁴

Trends

Since 2007, there have been large-scale interventions aimed at reducing food waste across supply chains and households in the UK. WRAP estimates that this may have contributed to a reduction in post farmgate total food waste between 2007 and 2018 of around 15% (1.7Mt). Total post farmgate food waste in the UK was 476,000 tonnes lower in 2018 compared to 2015 which equates to a 4.8% reduction (10Mt down to 9.5Mt). This can be partly attributed to consumer campaigns like WRAP's 'Love Food Hate Waste' and the UK Food Waste Reduction Roadmap (aimed at businesses), along with better labelling and storage guidance, and also more widespread food waste collections from councils.⁵⁵ Food waste in manufacturing reduced by around 395,000 tonnes between 2011 and 2018 (an approximate 20% reduction, from around 1.9Mt), whilst levels of food waste reported by retailers were around 290,000 tonnes in 2009 compared to 259,000 tonnes in 2020.

The UK has a commitment to UN Sustainable Development Goal 12.3 and the Courtauld Commitment 2030 to reduce per capita food system waste by 50% by 2030 (alongside targets on greenhouse gas emissions and water use).⁵⁶ Compared to the 2007 baseline, total per capita food waste had reduced by 20% by 2018, and 27% if 'inedible parts' are excluded. Climate change could have an impact, with extreme weather events, pests, diseases, and warmer temperatures all risks for increased food waste in production and the supply chain, unless adaptations are put in place.

Indicator 2.2.3 Household food waste

Headlines

Average waste of four key products was generally around 20% between 2018 and 2021. This fell sharply at the outset of the COVID-19 pandemic, with improved food management behaviours leading to a significant reduction in self-reported

⁵⁴ WRAP, 'Surplus food redistribution in the UK 2015 to 2020',

⁵⁵ WRAP, 'Love Food Hate Waste', 'Food Waste Reduction Roadmap',

⁵⁶ WRAP, 'The Courtauld Commitment 2030',

household food waste in 2020. These positive changes, however, have started to decline with people returning to a pre-pandemic lifestyle, and food waste levels have increased again in 2021 to pre-pandemic levels.

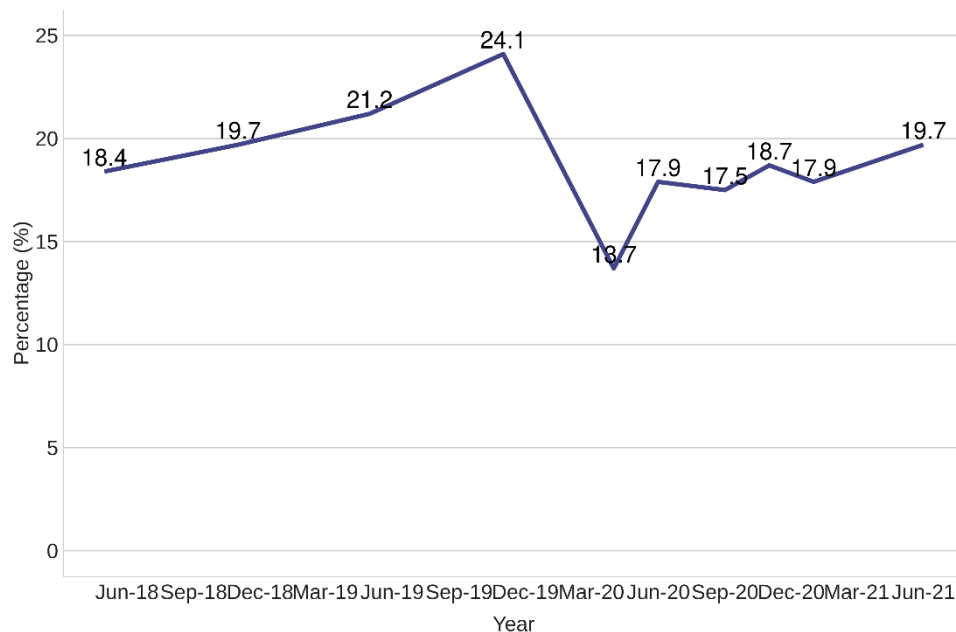
Context and rationale

WRAP estimates that in 2018, total annual food waste across the UK reached 9.5 million tonnes. The highest contributor to this total by weight were UK households, with 70% of post-farmgate waste arising in the home.

There are various approaches to measuring household food waste. For the purposes of this report, statistics have been chosen that are frequently updated to make tracking changes easier. The WRAP research used here estimates that bread, chicken, milk, and potatoes are some of the products most likely to be wasted, and therefore asked consumers to estimate the percentage that was thrown away uneaten of these four products following the last time they purchased each item.

Data and Assessment

Figure 2.2.3a: Estimated UK percentage of bread, chicken, milk, and potatoes wasted



Source: WRAP food waste trends survey 2021⁵⁷

There was a 10% decrease in reported levels of food waste, from almost a quarter (24.1%) of four key products in November 2019 to 13.7% in April 2020. This was mainly due to improved food management behaviours adopted during lockdown. Levels of food waste then rebounded to some degree but remained consistently below pre-lockdown levels across 2020. Self-reported food waste in June 2021 is now back in line with the levels recorded in 2018. It remains below the results for 2019 but shows a return to pre-pandemic levels.

Trends

WRAP's research in 2020 provided important insights into how well UK households responded to the pandemic by adopting positive food management behaviours. The decline in food waste in 2020 indicates how important it is to foster and maintain behavioural change to reduce food waste in the long-term. The gradual increase in food waste observed in 2021 could be an indication that returning to a pre-pandemic lifestyle, where people spend more time outside the house and experience higher levels of time pressure, has a negative influence on behaviours and waste levels.

WRAP also produces more in-depth research into household food waste but at a less frequent rate than the self-reported household levels presented in this report. Based on their data, there has been an overall 31% per capita reduction in edible household food waste with the majority of the reduction having occurred between 2007 and 2010.⁵⁸

Indicator 2.3.1 Sustainable agriculture

Headlines

Sustainable production methods ensure the UK's long term food security by protecting the natural capital embedded in healthy soil, water, and biodiverse ecosystems. Food security rests ultimately not on maximising domestic production (which is market driven), but on making best use of land types which vary in quality and potential uses. Balancing and integrating food production with

⁵⁷ WRAP, 'Food waste trends survey', [REDACTED]

⁵⁸ WRAP, 'UK progress against Courtauld 2025 targets and UN Sustainable Development Goal 12.3', [REDACTED]

environmental factors supports efficient and sustainable land use without offshoring harms associated with lower production standards. Following the UK's departure from the EU, new government incentives are being developed or considered across the four UK nations to support sustainable production.

Context and Rationale

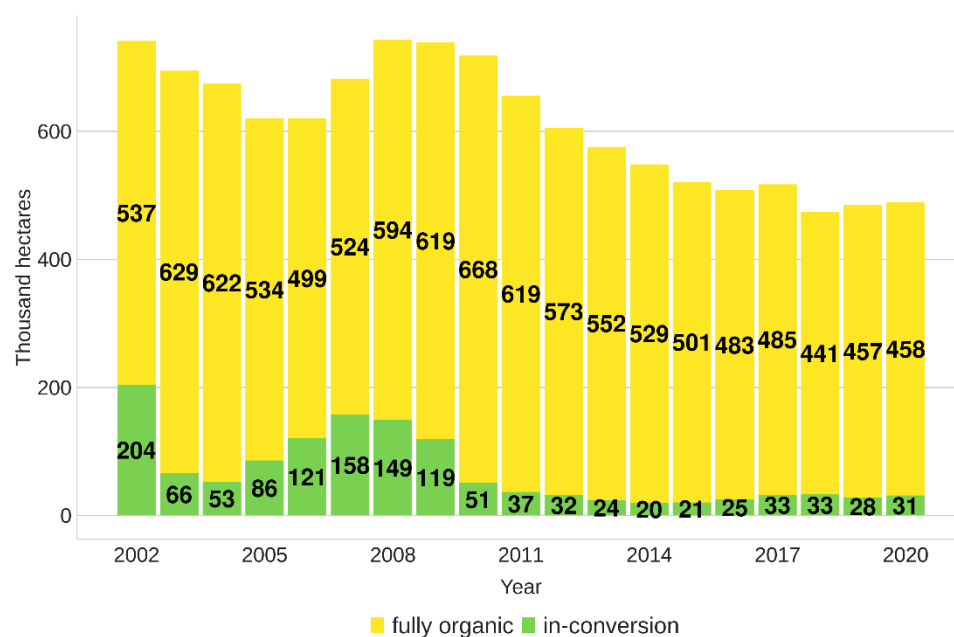
Food production does not happen in isolation from society or the environment. Farming can damage soil, air, and water, drive species loss and contribute to climate change, all of which threaten the current and future productivity and sustainability of agriculture, and therefore food security itself. On the other hand, good farming practices can reduce or reverse these harms, encourage biodiversity, and capture carbon all while producing healthy food.

Agricultural policy is devolved across the four UK nations. Following the UK's departure from the EU, the UK governments are able to set their own agricultural support schemes. The Scottish Government is currently consulting on a future policy, and the Welsh Government plans to launch a Sustainable Farming Scheme in 2025. In England, Defra has announced three new environmental land management schemes to pay farmers for land management and environmental services. The environmental impacts of these schemes may also affect productivity and Defra is investigating different methodologies to assess these. Future Food Security Reports will aim to show the effect these schemes have on food security.

Organic farming is in broad terms an indicator for current environment-orientated food production in the UK. Other systems such as no and low-till farming, agroecology, and agroforestry also contribute towards balancing sustainability and food production. Organic farming practices do not allow the application of chemical fertilisers or pesticides, or the routine feeding of antibiotics to animals, and they also have high standards for animal welfare. Consequently, productivity tends to be lower than in conventional systems. One of the core principles of organic farming is that by good land management, such as crop rotation, environmental harms can be reduced and soil health improved, offering greater sustainability in the long run.

Data and Assessment

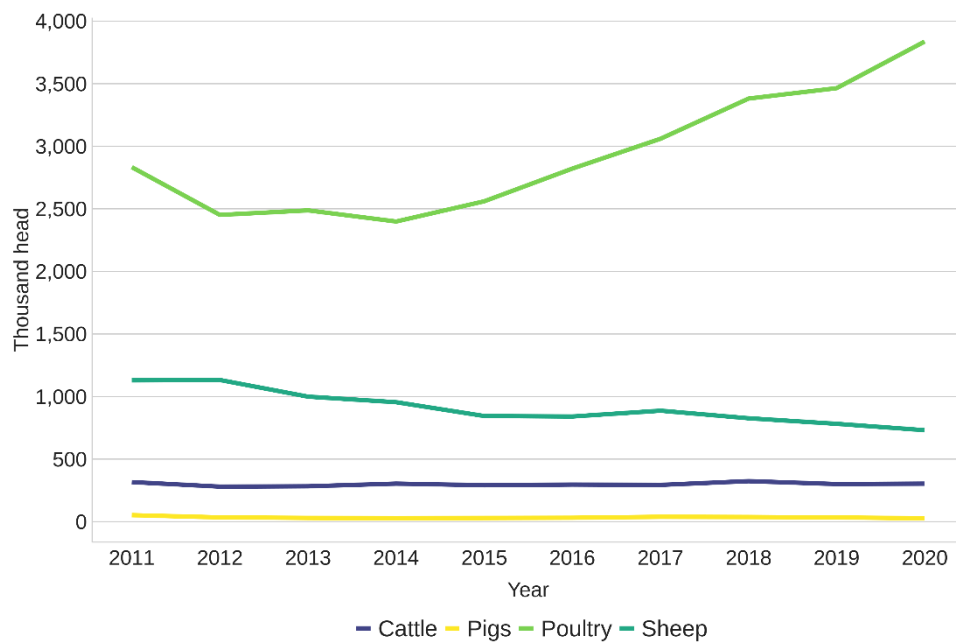
Figure 2.3.1a: UK area of land in-conversion and fully organic



Source: Organic certification bodies collated by Defra statistics

In 2020, organically farmed land represented 2.8% of total UK farmed area, at a little under 500,000 hectares. Organically farmed land has declined from a peak in 2008, but risen slightly again since 2018, while the number of organic processors and producers continues to fall, now down over 25% since 2008. These trends seem to indicate movement towards fewer farmers managing larger areas of land, mirroring trends across agriculture.

Figure 2.3.1b: UK organic livestock numbers



Source: Defra AUK 2020

AUK data also shows that permanent pasture (grassland) is by far the biggest proportion of organic land at 62%, followed by temporary pasture (for example grass-clover leys in crop rotations) at 20% and cereals at 9%. The high proportion of grassland indicates that grazing livestock remain significant for organic producers. However, steady declines in sheep numbers may demonstrate the wider economic challenges of farming on marginal land, while an increase in poultry has been fuelled by massive growth in laying hens, presumably the result of consumer demand for organic eggs.

Trends

Total land area allocated to organic farming peaked in the 2000s and has declined slightly since, perhaps partly due to tougher economic times since 2008. With new environmental land management schemes promising alternative rewards for balancing productivity with environmental benefits, sustainable production in the UK is likely to grow in scale and importance.

Indicator 2.3.2 UK soil health

Headlines

Estimates suggest soil degradation, erosion, and compaction result in losses of about £1.2 billion each year and reduce the capacity of UK soils to produce food.

Context and Rationale

Soil health is essential to the long-term security of food production globally and in the UK, and the Climate Change Committee has also identified it as one of the key concerns for climate change. Soil health is affected by several factors, including structure, water retention, soil organic matter, mineral content, and damage through erosion, compaction, and contamination. There is some data available, but the challenge of covering it graphically reflects the difficulties of adequately representing the complexity of soil health with any single indicator, and the great variety of soil types in the UK. Consequently, this section relies on qualitative analysis.

Data and Assessment

Two soil health factors tracked by Defra are soil nitrogen and phosphorus levels, which have remained broadly stable over the last ten years at around 90kg/hectare and 6kg/hectare respectively.⁵⁹ Indicators on nitrogen and phosphorus levels in soil are useful for judging optimum fertiliser application rates but have little to say about soil health more generally.

Soil erosion reduces productive capacity and causes nutrient loss, as well as off-site environmental harms such as water pollution. Improving soil organic matter can benefit long term soil health and sustainable productivity. For example, with some cereals, planting early in the autumn to establish soil cover reduces soil erosion risk while increasing yields.

It has been estimated that soil degradation costs England and Wales £1.2 billion per year and that intensive agriculture has already caused arable soils to lose 40% to 60% of their organic carbon. Soil erosion in England and Wales is lower than many other countries, but it is estimated that 2 million hectares are still at risk. Around 3.9 million hectares are at risk of soil compaction in England and Wales – nearly twice the total area of Wales – with a potential yield penalty of

⁵⁹ Defra, 'Soil nutrient balances UK 2020', <https://www.gov.uk/government/statistics/uk-and-england-soil-nutrient-balances-2020/soil-nutrient-balances-uk-2020-statistics-notice>.

£163 million every year; the risk is highest on clay soils during wet periods.⁶⁰ Similar impacts have been recorded in Scotland.⁶¹

Soil health is perhaps the single most important factor for future domestic food production. It is hoped that future editions of the UK Food Security Report will cover soil health with quantitative data as well as qualitative analysis, as filling this data gap will be important for understanding future food security.

Trends

Soil health in the UK is an extensive and costly problem, but without proper indicators it is difficult to determine the speed and direction of change. Climate is a key factor in soil formation and processes, and severe degradation of soil would have long-term, potentially irreversible, implications considering the critical importance of soil for protecting the environment and providing high quality farmland. Conversely, well-planned mitigation activities around soil management have the potential to contribute to climate adaptation through, for example, increased soil organic matter and water holding capacity, contributing to 'sustainable intensification'.

Indicator 2.3.3 Climate change impacts on yields

Headlines

Climate change and emissions pose significant risks to production and food security. As a consequence of unusual weather patterns associated with climate change, wheat yields in 2018 were 7% below the 2016 to 2020 average, and in 2020 were 17% below that average. Ozone in the low atmosphere has a separate, ongoing effect on yields; total economic losses for wheat, potato, and oilseed rape in the UK caused by damage due to ozone may have been over £185 million in 2018, with more than 97% of losses occurring in England.

⁶⁰ Environment Agency, 'State of the Environment: Soils', <https://www.gov.uk/government/publications/state-of-the-environment/summary-state-of-the-environment-soil>.

⁶¹ CREW (Scotland's centre of expertise for waters), 'Effect of Soil Structure and Field Drainage on Water Quality and Flood Risk',

Context and Rationale

As the UK Climate Risk Independent Assessment (CCRA3) sets out in Chapter 3 of the Technical Report, agriculture is highly dependent on climate, affecting the productivity and viability of crops and livestock.⁶² Weather and climate variations affect both utilised land area and yields. The effects of heat, cold, wetness, and drought can have positive effects on production, but most of the consequences of a changing climate are negative.

Longer growing seasons and warmer temperatures may have some positive effects for particular crops and regions, but overall risk magnitude is assessed to increase from medium at present to high in future. Increased climate exposure (including heat stress, drought risk, and wetness-related risks) is modifying productive capacity and will continue to do so in future in line with the degrees of warming experienced. The severity of risk to agriculture from climate change could further increase if mitigation efforts are ineffective in preventing non-linear threshold effects and ‘tipping points’ in global systems.

A separate consequence of polluting emissions is an increase of ozone in the troposphere (the low atmosphere, including at ground level). Ozone is not directly emitted but is formed in the atmosphere by the action of sunlight on ozone precursors (nitrogen oxides, volatile organic compounds (VOCs), methane, and carbon monoxide). With the exception of VOCs, ozone precursor emissions are dominantly human-caused, resulting especially from industrial activity.⁶³ While important for absorbing ultra-violet radiation in the high atmosphere, ozone at ground level is harmful to human and plant life and is calculated to have a significant effect on crop yields.

Data and Assessment

The CCRA3 provides examples of productivity in years with unusual climatic features. The 5-year average for UK wheat yields in 2016 to 2020 was 8.4 tonnes per hectare, but a hot, dry summer in 2018 (7.8 tonnes per hectare) and a very wet winter and dry spring in 2020 (7 tonnes per hectare and 40% down compared with 2019), resulted in significant yield losses. By contrast, 2015 and 2019 had above average UK wheat yields, demonstrating volatility from year to year. The hot, dry summer of 2018 also affected other crops, with carrot yields down 25% to 30% and onion yields down 40% on a normal year, whilst potato yields were down on average 20% in England and Wales. Climate sensitivity can also affect the

⁶² UK Climate Risk Independent Assessment, ‘Technical Report: Chapter 3: Natural Environment and [REDACTED]’

⁶³ European Environment Agency, ‘Tropospheric ozone’, [REDACTED]

quality of produce, with consequences for food security. For example, weather conditions prior to harvest can impact the quality of milling flour and its protein content. Changes in temperature and humidity can also exacerbate problems with pests, diseases, and heat stress, as set out in the next case study.

On the positive side, warmer temperatures may open opportunities for new crops, and a reduction in the frequency of frost days across the UK has benefits for both arable agriculture and horticulture, through reduced incidence of frost damage for vulnerable crops. However, many tree species and other crops need a period of cold weather to produce a good crop every year, and therefore suffer from a lack of proper cold temperatures over winter.

Beyond unusual temperatures, rainfall and drought, the consequences of climate change also include increased risk of wildfires, flooding, coastal erosion, and high winds. All of these can have severe impacts on agricultural production in affected areas.

A report for the UK Centre for Ecology and Hydrology calculates that the ozone impact on crops in 2018 reduced UK wheat production by 5.5%, amounting to a production loss of 800,000 tonnes with an economic value of approximately £125 million (at average prices for 2018).⁶⁴ The highest production losses were indicated for eastern and southern counties of England, particularly Cambridgeshire, Essex, Suffolk and Lincolnshire, and parts of Hampshire, Wiltshire and Dorset. It also reduced UK potato yield by 6.5%, resulting in a loss of 305,000 tonnes of potato tubers worth £50 million, with the highest production losses in parts of North Yorkshire, Cambridgeshire, Hertfordshire and Bedfordshire. Ozone reduced UK oilseed rape production by 1.9% in 2018, amounting to 39,000 tonnes of lost production, worth £11 million; the highest production losses were predicted for central England.

Ozone also affects other plants, reducing flower numbers in perennial grassland by 10%, annual total biomass increment in perennial grassland in the UK by 2.7%, and annual biomass increment in managed broadleaf woodland by 7.3%. These impacts could affect overall biodiversity, and livestock and biomass yields, with consequences for land use.

Trends

Climate change poses a risk to UK food production already, and this risk will grow substantially over the next 30 to 60 years. Minimising the extent of global warming

⁶⁴ Centre for Ecology and Hydrology, 'NECD Reporting 2020 – Quantifying and mapping exceedances of ozone flux-based critical levels for vegetation in the UK in 2018', forthcoming, <https://uk-air.defra.gov.uk/library/>, pages 4 to 5.

and addressing the risks it poses to food production are both essential to future food security. Ozone causes yield loss every year, particularly in Southern and Eastern England.

Case Study 2.1 Climate change: farming impacts and risks⁶⁵

Understanding how the climate is projected to change across the UK during the 21st century is vital for UK agriculture, food security, and commercial food sectors. Plants, animals, and soils are affected by the weather through variations in temperature, rainfall, and humidity. Climate-related impacts may occur through gradual change, or as a result of more rapid changes triggered by extreme weather events such as drought and flood.

The UK climate is changing, average temperatures have increased, and seasonal rainfall is highly variable. To understand how the climate may change in the future, the UK Climate Projections (UKCP18) use a range of climate models to provide probabilistic simulations of UK climate to the end of the 21st century in a high concentration climate scenario known as RCP 8.5.

How might temperature change in the future?

From the UKCP18 data, all areas of the UK are projected to experience warming, particularly in the summer, which could have implications for growing season duration, crop yield, and quality. Regional projections for 2061 to 2080, using the RCP 8.5 scenario, show greater warming in Southern England compared to northern regions of the UK.

Warmer temperatures will increase the occurrence of heat stress, which can impact livestock productivity, fertility, welfare, and mortality. The area of greatest risk for thermal heat stress in dairy cattle now and in the future is South West England. Other key areas of high future risk and large risk increases include Northern Ireland, Wales, the Midlands, North West England and North West

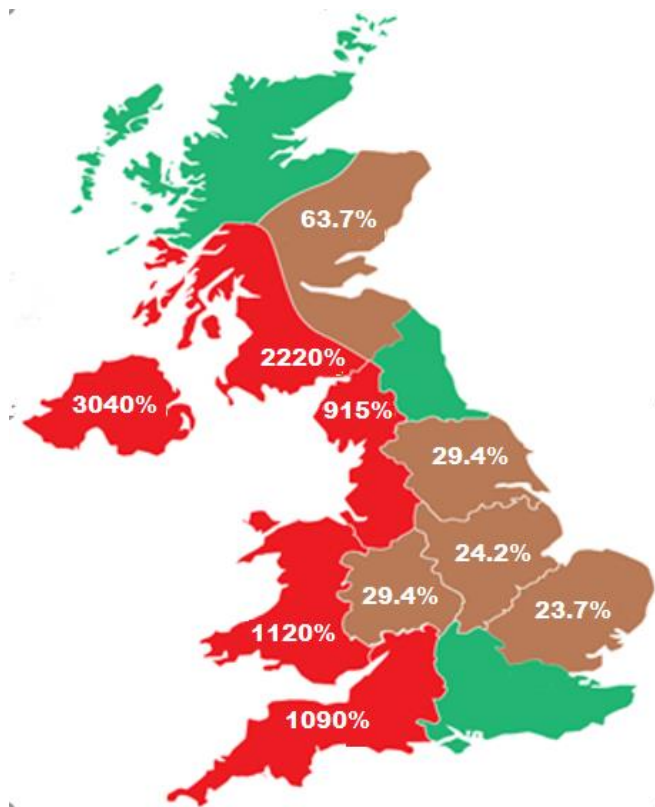
⁶⁵ Met Office Hadley Centre Climate Programme 2018 to 2021, Developed from Joanna Jones, Edward Pope, Debbie Hemming, Freya Garry, James Bacon and Jemma Davie, 'Future climate risk to UK agriculture from compound events',

Scotland. Risk of thermal heat stress in dairy cattle is projected to increase by over 1000% in South West England, the region with the most dairy cattle.

Warmer temperatures can also encourage fungal diseases such as potato blight (in combination with higher relative humidity), and other pests and pathogens, including the peach-potato aphid (*Myzus persicae*) which is a risk to over 400 plant species, including potatoes and sugar beet.

The Met Office is currently researching how increasing future temperatures may impact different livestock types, combined with changes in grass productivity.

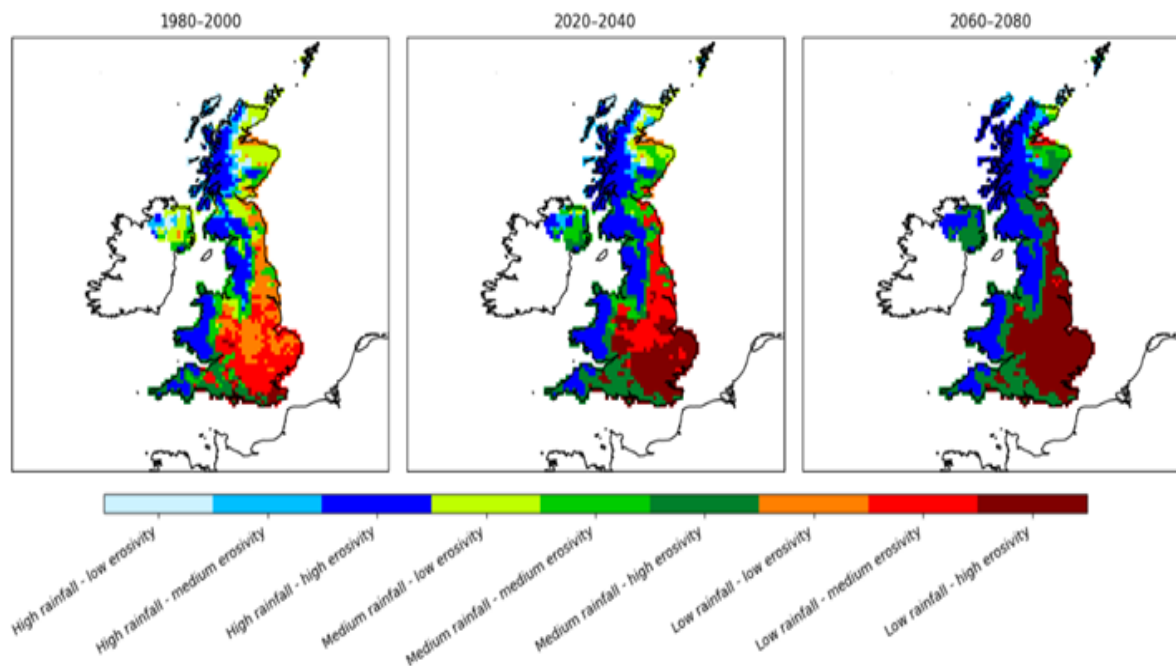
Figure 2.1a: Increases in risk for future climate (2051 to 2070) compared with current climate (1998 to 2017) for thermal heat stress in cattle (red) and potato blight (brown).



Risks to soils from changes in UK rainfall

Understanding climate impacts on soil erosion is vital for ensuring a sustainable and resilient food system. Using the UKCP18 climate simulations, the Met Office looked at the potential future impacts of climate change on soil erosion risk through changes to rainfall erosivity.

Figure 2.1b: Categorisation of erosion risk using mean annual precipitation totals and annual mean erosion values derived from hourly precipitation data for the UKCP18 convection permitting models. Regions with low rainfall-high erosivity density and high rainfall-high erosivity density are considered at the greatest risk of erosion.



Rainfall erosivity is the measure of rainfall total and intensity, and is one of five main predictors that can be used to describe soil loss rates. To identify regions at risk of soil erosion, information on present-day soil erodibility is combined with rainfall erosivity.

The study looked at rainfall total and erosivity across the UK for three time periods (1980 to 2000, 2020 to 2040, and 2060 to 2080) in a high concentration climate scenario (RCP8.5). Key findings include:

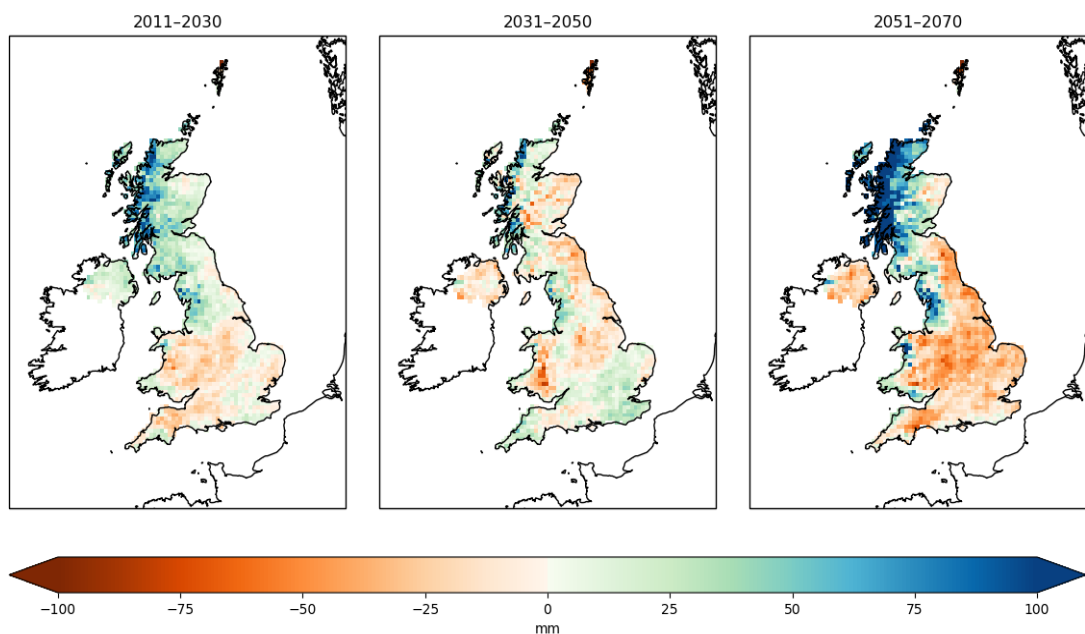
- Large projected increases in areas of relatively high erosion risk and potential soil degradation across South and East England.
- By 2060 to 2080, regions considered at the greatest risk of soil erosion, due to rainfall, included the Midlands, East Anglia, and the Yorkshire coastline.
- Combined with the soil erodibility data, a large area of Southern England is at risk of increased rates of soil erosion.

Potential impacts: Arable farming in East Anglia is likely to be adversely affected by soil erosion, due to the entire region being considered at relatively high risk of erosion by 2060 to 2080. The results shown in the figure below only consider meteorological factors, and further work is needed to incorporate land cover and land management practices for a comprehensive assessment of erosion risk.

How might seasonal and spatial rainfall patterns change in the future?

Rainfall is the largest source of water for growing grass and crops in the UK. Changes in rainfall patterns can impact water storage, plant productivity, and cause soil erosion and waterlogging. Using data from UKCP18, the Met Office looked at how annual rainfall across the UK may change in the future. As highlighted in the figure below, by 2051 to 2070 average 12-month rainfall accumulations are projected to increase across North West England, Scotland, and coastal regions around Wales. In contrast, rainfall accumulations across the rest of England and Wales are projected to decrease. Annual rainfall variability is projected to increase with greater potential for both extremely high and low national rainfall totals. South-central England and North West Scotland are projected to experience the greatest annual rainfall variability, which may require changes in water management.

Figure 2.1c: Difference in average 1-year rainfall accumulations (measured in mm) compared to baseline period (1991–2010) under RCP8.5, using bias corrected UKCP18 convection-permitting climate model projections.



Risks to UK agricultural areas from drought

Seasonal drought can lead to significant reductions in crop yield and there is currently a 3% chance per year that at least 80% of the UK wheat area could experience drought. Wheat varieties that are tolerant to a range of weather conditions, such as flooding and drought, may need to be considered in the future.

Recent Met Office research used UKCP18 simulations to assess the future impact of drought in the UK, focusing on the period 2041 to 2070. Key findings include:

- Winters are projected to be slightly wetter, on average, while all other seasons are projected to be typically drier, particularly June to September.
- During the summer months, the South East showed the greatest increase in severe drought conditions.
- Between April and October drought conditions are more likely, suggesting that a changing climate will affect water availability during the UK's main crop growing season.

Indicator 2.3.5 Environmental impacts of agriculture

Headlines

Agriculture is impacted by the environment and climate change, but it also affects them in turn. The UK has environmental standards and targets relating to water quality, meeting Net Zero, and biodiversity, all of which continue to be areas where agriculture has a negative impact on the environment.

Context and Rationale

As well as soil health (discussed at **Indicator 2.3.2**), agriculture also has an impact on water, air, and living things.

In some areas an abundance of water falls and flows, whereas in other areas it is a scarce and valuable resource and is abstracted for agricultural use. As a percentage of total water abstraction this is tiny (around 1% in England), but this abstraction is highly regionally and seasonally concentrated and represents a substantial burden in some areas, particularly in summer months. Furthermore, agriculture can have a negative effect on water bodies that provide other vital services, especially through pollution caused by soil and fertiliser run-off.

The farming sector is a significant source of greenhouse gases, such as methane and nitrous oxide from livestock and fertilisers. Carbon dioxide emissions are largely caused by farm vehicles and machinery and can also result from poor soil management.

Biodiversity is an important indicator for understanding the overall sustainability of food production, fisheries, and farming practices in the UK. Good biodiversity also provides important ecosystem services to agriculture. Biodiversity is difficult to measure, so Defra has tended to rely on the long-standing Farmland Bird Index, which tracks the numbers of 19 bird species: 7 'generalist' species that thrive in

many environments, and 12 'specialist' birds which rely heavily on farmland habitats. Birds sit at the top of the food chain and reflect the diversity and availability of insect and plant species; however, they directly show only a part of the biodiversity picture, and do not in themselves provide ecosystem services to agriculture.

Data and Assessment

WRAP's 2019 progress report on the Courtauld 2025 Water Ambition notes that 14% of rivers are over-abstracted and nearly a quarter of rivers in England are at risk from unsustainable water abstraction; a similar proportion of aquifers are classed as in 'poor quantitative status'.⁶⁶ The same study asserts that 86% of rivers do not meet good ecological status and over 50% of England's freshwater and wetland species have declined since 1970.

For water availability, the UK is vulnerable to drought and flooding. The 2018 drought severely affected harvests, resulting in costly alternatives such as sourcing onions from New Zealand to fill supply gaps. UKCP18 show projected patterns of hotter, drier summers and a risk of more frequent and intense periods of aridity, which will have an impact on water availability for agriculture and food production. Building resilience reduces risk but could also have positive effects. For example, WRAP estimates that better water management could boost crop production by 20% globally.

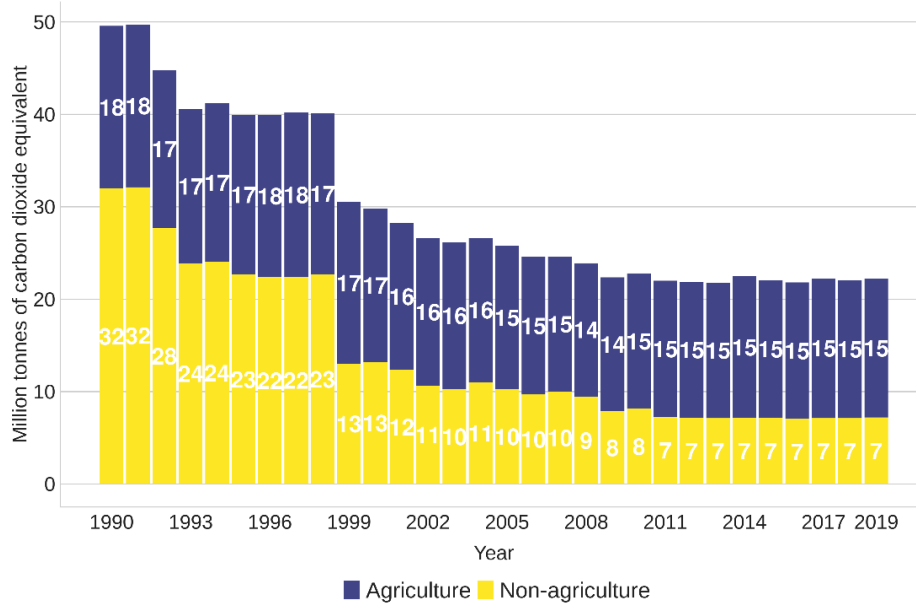
Agriculture contributes to the pollution of water bodies through run-off and soil absorption of fertilisers and manure nutrients, pesticides, sediments, and faecal bacteria. High nutrient concentrations damage aquatic ecosystems and must be removed from drinking water, which is expensive. The same WRAP report estimates that it costs approximately £1.2 billion each year to remove pollutants from water so that it is safe to drink. At the same time, soils and nutrients are lost into watercourses through diffuse pollution. It has been estimated that agriculture accounts for around 61% of the total nitrogen in river water in England and Wales and around 28% of the total phosphorus load in river water in Great Britain. Diffuse water pollution from agriculture and rural land use has been directly attributed to 28% of failures to meet Water Framework Directive (WFD) standards in England.⁶⁷ This is monitored separately across the four nations.⁶⁸

⁶⁶ WRAP, 'Working together to protect critical water resources,'

⁶⁷ Parliamentary Office of Science and Technology, 'Diffuse pollution of water by agriculture'

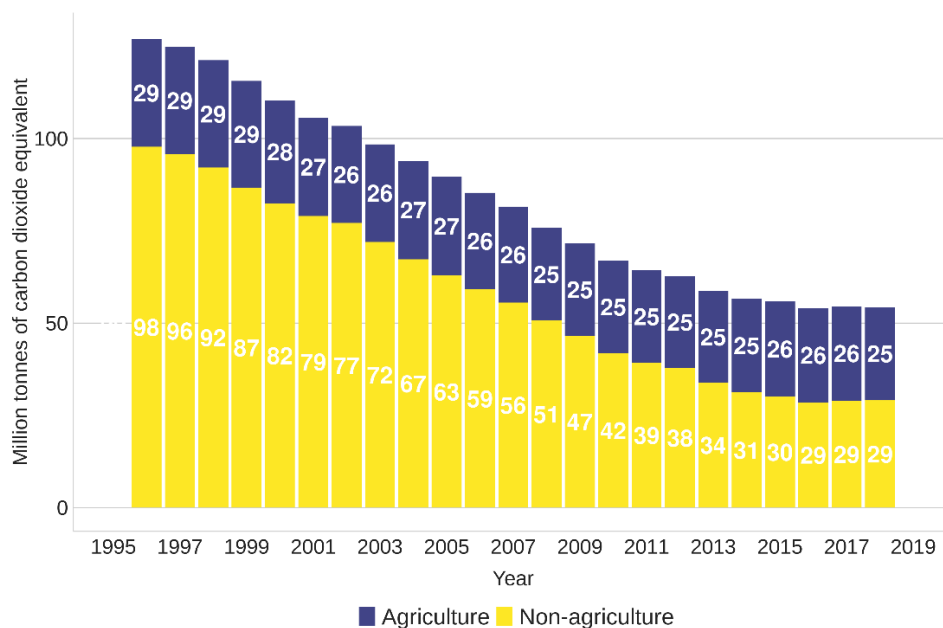
⁶⁸ Environment Agency, '2021 River Basin Management Plan: Nitrates', <https://consult.environment-agency.gov.uk/++preview++/environment-and-business/challenges->

Figure 2.3.5a: UK nitrous oxide emissions



Source: Defra AUK 2020 (Department for Business, Energy and Industrial Strategy)

Figure 2.3.5b: UK methane emissions



‘Nitrates monitoring’,
 Natural Resources
 Wales, ‘Diffuse Water Pollution Action Plan’,
 DAERA, ‘Nitrates Directive’, <https://www.daera-ni.gov.uk/articles/nitrates-directive>.

Source: Defra AUK 2020 (Department for Business, Energy and Industrial Strategy)

Agriculture accounted for about 11% of total greenhouse emissions in the UK in 2019, with agricultural emissions 13% lower than in 1990. This was primarily the result of reduced livestock numbers following BSE and foot and mouth outbreaks in the 1990s and early 2000s, and have not reduced significantly since 2008. A recent WRAP report estimates that total UK food system emissions are equivalent to 35% of UK territorial emissions; over a third of food system emissions are from production overseas.⁶⁹

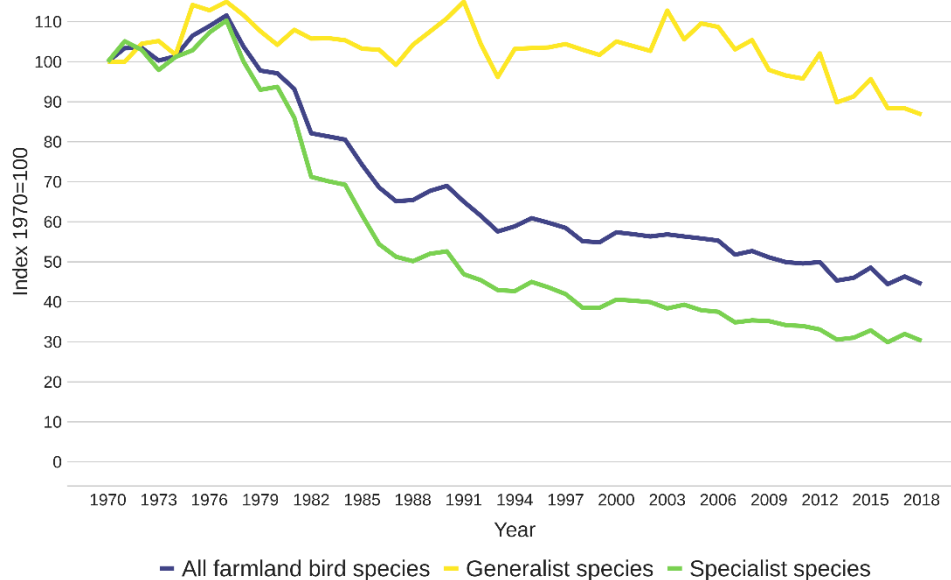
Agricultural emissions of nitrous oxide and methane declined through the 1990s and 2000s and have remained fairly stable since. The majority of nitrous oxide emissions from agriculture result from manure management and application of organic and mineral fertilisers to land, and have fallen with lower fertiliser application rates. The majority of methane emissions come from enteric ruminant digestion in livestock, which has fallen and then remained level just as livestock numbers have. There is research underway to investigate the link between ruminant diet and emissions to see if food additives like Bovaer 3-NOP or dietary supplements such as seaweed might help mitigate methane emissions. Even between systems producing the same outputs (like beef or dairy), greenhouse gas emissions vary greatly, and average emissions are not necessarily that informative. A nuanced, full lifecycle approach to policy on agriculture and greenhouse gases is required to understand the complexities.

It is also important to consider greenhouse gases in a global context to ensure the UK does not export emissions (and other environmental harms) to other parts of the world by replacing domestic production with imports from more environmentally damaging systems.

⁶⁹ WRAP, 'UK Food System GHG Emissions', [REDACTED]

Note: An index number is a statistical measure that reflects a price or quantity compared with a standard or base value. The base usually equals 100 and the index number is usually expressed as 100 times the ratio to the base value. For example, if a bird population in 1980 was twice as large as it was in 1970, its index number would be 200 relative to 1970.

Figure 2.3.5c: UK farmland bird index



Source: Defra AUK 2020 (BTO/RSPB)

Data is limited, but from farmland bird numbers it appears that biodiversity on UK farms may have fallen to about 30% of what it was in 1970. There was a sharp decline in farmland birds during the 1970s and 1980s as farming became more intensive. The decline has continued more gradually ever since and remains concerning. The ‘specialist’ species like corn buntings and yellowhammers are the better measure for understanding the impacts of farming on biodiversity as they rely most heavily on farm habitats, whereas ‘generalists’ like wood pigeons thrive in a variety of habitats. While birds are only a part of the biodiversity picture, their reliance on the food chain below them makes them a proxy indicator for plant, mammal, and insect biodiversity.

Biodiversity is key to stable farming systems. The right plants in the right place can reduce nutrient leeching, and a healthy ecosystem with insects like spiders, beetles, and earwigs can reduce pesticide use. Warmer temperatures and excess or reduced water availability has an impact on species and habitats; climate modelling and analysis of 402 species in England found that 36% were at risk of range loss and 41% may expand their range in future. This can be aggravated through agriculture and food production driving land use change, habitat loss, and fragmentation. Between 2010 and 2018, 58 recorded non-native species have become established in the UK. Though some (like the tree bumblebee) can have

positive effects, overall these are one of the top 5 threats to England's natural environment, with estimates of the economic cost at around £1.3bn per annum.⁷⁰ Farming practices and global supply chains have accelerated their spread.

A fuller view of biodiversity indicators, including pollinators, marine environment, non-native species, and many others can be found in a new report on UK biodiversity indicators by the Joint Nature Conservation Committee.⁷¹

Trends

Water health and abstraction are both expensive societal costs, and important issues for agriculture to address for a sustainable, food-secure future. WRAP is working towards the Courtauld 2030 Water Ambition to improve water quality and availability through sustainable water management; a progress report on a series of UK (and international) case studies on water use can be found in the 2021 annual report.⁷²

Greenhouse gas emissions from agriculture have reduced overall since 1990, but have not changed in recent years. The newly published Net Zero Strategy sets out areas where innovation and emerging technologies may support the sector in adapting to climate change, and also discusses alternative proteins (Chapter 3, sections 22 and 33).⁷³ WRAP's Courtauld Commitment 2030 aims to reduce UK food system greenhouse gas emissions by 50% by 2030 (alongside targets on water and waste).⁷⁴

The continued decline of farmland birds shows that the agricultural intensification which accelerated in the 1970s continues to harm the UK's biodiversity and, consequently, ability to produce food sustainably and in symbiosis with nature. A changing climate also increases the threat to specific species and ecosystem services through spread of new pests, pathogens, and invasive non-native species. Farming and food production can exacerbate these risks but could also play a major role in supporting the UK's natural ecosystems, delivering mutual benefits to biodiversity and society.

⁷⁰ UK Climate Risk Independent Assessment, 'Technical Report: Chapter 3: Natural Environment and Assets', [REDACTED] pages 24 and 47 to 48.

⁷¹ JNCC, 'UK Biodiversity Indicators 2021 Revised', <https://jncc.gov.uk/our-work/uk-biodiversity-indicators-2021/>.

⁷² WRAP, Courtauld Commitment Annual Report 2021, [REDACTED]

⁷³ BEIS, 'Net Zero Strategy: Build Back Greener', <https://www.gov.uk/government/publications/net-zero-strategy>.

⁷⁴ WRAP, 'Courtauld Commitment 2030', [REDACTED]

Theme 3: Food Supply Chain Resilience

This chapter of the UK Food Security Report looks at food security in terms of key infrastructure underlying the supply chain. Sourcing and supplying food to consumers in the UK is dependent on a complex and interacting web of systems. The theme considers how efficient and resilient systems are to transport, store, manufacture, and sell food on its path from commodity to consumers. It describes the potential threats and vulnerabilities to the sophisticated 'just-in-time' supply chains underlying the modern food system and how industry and government collaborate to prepare for and respond to issues.

In terms of this theme, food security means a supply chain that is consistently able to deliver adequate quantities of food, both through preparing for disruption and having the capacity and flexibility to respond effectively to unexpected problems. A resilient supply chain is robust and resilient, possessing an ability to recover from disruption and which can re-orientate to alternate outcomes when necessary.

Key Messages

- The UK is resilient to potential shocks in the food supply chain. Supply systems, which are owned and operated by the private sector, are adaptable and flexible in responding to problems. Government monitors risks and works with industry to respond to emerging issues and maintain supply chains.
- Notable risks to the supply chain stem from its dependence upon other critical sectors including energy, transportation, borders, labour, key inputs (chemicals, additives and ingredients), and data communications. In addition, the threat of cyber-attack to UK businesses, including those in the agri-food sector, is significant and growing.
- The food and drink sector's dependency on energy has marginally declined thanks to increased energy efficiency, whereas demand for energy in the agricultural sector has remained stable in the last 20 years.
- Both EU and non-EU food imports, via all modes of transport, are well spread across a number of ports of entry, with no port having a dominant share. There is, however, a reliance upon the Short Strait for some food products, including fruit and vegetables (62% of fruit and vegetable imports arrive from the EU via the Short Strait), meats (43%), and dairy (41%). Only simultaneous disruption to several ports would be serious enough to have a material effect on UK food supply.
- Securing sufficient labour at appropriate skill levels presents additional issues for the agriculture and food sectors. This includes short-term challenges, mainly due to high levels of absenteeism caused by coronavirus (COVID-19), and the longer-term challenges of filling vacancies across the agri-food sector.

- A number of pressures in recent years, including the COVID-19 pandemic widely impacted the UK food supply chain. However, it also demonstrated the resilience held within supply chains, through an effective industry-led response, supported by government, to apply key mitigations to uphold continuity in the food supply chain.

The UK's food supply chain is a highly complex system. It encompasses:

- primary producers (for example, farming, fishing)
- food manufacturing (for example, factories, process plants, mills, refineries, production plants)
- logistics (for example, storage, distribution centres, transportation, ports)
- wholesale and retail (for example, wholesalers, supermarkets, local businesses)
- food services (for example, restaurants, cafes and caterers).

The importance of the UK food supply chain cannot be overestimated. Food is one of 13 Critical National Infrastructure (CNI) sectors in the UK. CNI sectors are “those facilities, systems, sites, information, people, networks and processes necessary for a country to function and upon which daily life depends”.⁷⁵ Every element of the supply chain, from food manufacturing to retailers, relies on physical infrastructure (buildings, vehicles, machines, power and data connections); digital infrastructure (the digital technologies that provide the cyber foundation for information technology and operations); human infrastructure (the skilled people who work in the supply chain and their working relationships with each other) and economic infrastructure (the system of finance, contracts and agreements that allow businesses to make money and operate productively.) Problems arising anywhere in this system can cause disruption to the supply of food.

In the UK the underlying infrastructure of the supply chain is owned and operated by private industry. The agri-food sector holds the capability, levers, and expertise to respond to potential disruptions.

Food supply policy including risks relating to resilience and security is devolved to each national administration. National Security and Counter Terrorism (CT) policy is a specific reservation under the Home Affairs heading. As lead departments for food as a CNI sector, Defra and the Food Standards Agency (FSA) manage those risks specifically relating to National Security and CT across the UK government. However, the role of government is an indirect one; to plan for and coordinate responses and intervene only where necessary to ensure the continuity of supply.

⁷⁵ CPNI, ‘Critical National Infrastructure’ (2021), <https://www.cpni.gov.uk/critical-national-infrastructure-0>

Energy and other critical resource inputs

All stages of the food supply chain, including production, processing, packaging, distribution, transport, retailing and the consumption of food itself, are dependent on their use of energy, other key inputs, and the functioning of critical interconnected systems. Fluctuations in the energy market also affect the prices of commodities or key inputs such as carbon dioxide (CO₂). These fluctuations can therefore affect the economic viability of food businesses.

Over the last 20 years, energy demands for UK agriculture have remained consistent whilst demand for energy from the food and beverage sector has declined in the same period, indicating increased energy efficiency. This reduces the risk posed to businesses by disruption to energy supply or price shocks, but the sector remains reliant on energy sources, which can be volatile. The source of risks to the supply of electricity, natural gas, and petroleum products varies, with the most significant current risks being a reliance on imported natural gas.

Disruptions to major power networks in August 2019 highlighted the challenge of energy supply for the food system. Though the power disconnection itself was relatively short-lived, the knock-on impacts to other services were significant. This event demonstrated the need for essential service providers, including those in the food sector, to have robust business continuity plans in place for disruptive events such as power outages.

Certain goods critical to the functioning of the food supply chain are known as 'key inputs' and their supply is monitored by government. Although the provision of these goods is industry led, government supports industry in developing plans and mitigations to ensure continuity of supply.

Key inputs in the food supply chain are diverse and interface with an array of different markets. Challenges to access for these key inputs can come from a range of sources and causes. As an example, disruptions to CO₂ supply occurred both in 2018 (as a result of unexpected maintenance and operational challenges for fertiliser plants) and 2021 (as a result of complex economic factors ultimately caused by an increase in the price of natural gas). Where necessary, government can make targeted interventions to support continuity of supply, and over the longer-term, work with industry to build resilience.

Transport and logistics

The transport sector plays a strategic role in connecting the UK food supply chain. It links UK ports, farms, food manufacturers, retailers, food service providers, and consumers. It is essential to the import and export of food. Food is primarily transported by sea, road and rail, and recent challenges related to the COVID-19

pandemic and the UK's departure from the EU have made clear just how reliant the food supply chain is upon the transport sector.

The UK food supply chain is dependent upon just-in-time logistics systems, which allow the transportation of all food within short timeframes and as close as possible to when it is needed. For fruit, vegetables, and other items with a short shelf life, this allows food to be as fresh as possible and avoids food waste. These transportation systems are highly efficient, regular, and predictable, and allow consumers to have widespread access to food on supermarket shelves.

Just-in-time supply chains are sensitive to disruption to transport, particularly in road freight. Overall delay times on the Strategic Road Network, responsible for two thirds of all freight, have increased over the last five years.

Ports of entry to the UK are particularly important links in the just-in-time supply chain. As a nation the UK imports 46% of the food it consumes. Having a diverse range of international supply sources provides greater flexibility and makes food supply more resilient in the event of disruption. Equally, diversity in these access points provides flexibility and greater resilience in response to disruptions.

Around a quarter of the UK's food imports pass through the Short Strait (Dover and the Channel Tunnel), and short-life products from the EU are highly reliant on these routes. 62% of fruit and vegetable imports from the EU arrive via the Short Strait, 43% of meats and 41% of dairy imports. Food and beverage imports are otherwise spread across a number of ports of entry, with no one port dominating.

Despite diversity of entry for the most part, UK ports are also subject to a variety of risks that may be geographically correlated, such as tidal surges on the East Coast. The impact of any disruption to ports would depend on the length and scale of the disruption, as well as the ability to find alternative points of entry in the timescales required. A further consideration is the dependency of the UK on the resilience and regulatory approach of ports, especially in the EU. For example, imports can be severely disrupted by border closures. Border issues may have different dynamics and affect freight differently. During the COVID-19 pandemic, the UK experienced two border closures, neither of which caused serious supply issues.

Labour and skills dependency

Throughout the supply chain, people are vital. In growing and harvesting, transporting goods, food manufacturing, and in retail of finished food products, the agri-food workforce employs 4.1 million people and represents 13% of Great Britain's employment. The continuity of food supply is dependent upon securing sufficient labour with skills necessary to carry out specialised tasks.

The types of roles across the agri-food sector are vast. They include skilled and highly skilled roles – including, for example, engineers, butchers, supervisors, auditors, and veterinary nurses. The agri-food sector is also highly reliant upon roles classified as ‘low-skilled’. These roles are often labour intensive and common in the agriculture and hospitality sectors.

There are challenges securing sufficient labour across the agri-food chain. These challenges are both short-term and longer-term and interact with the wider challenges facing the UK economy, posing a threat to food supply resilience. They include dependency on agricultural seasonal workers and other skilled food chain labour from the EU along with the continued impact of COVID-19 on the workforce.

Food retail and wholesale

Diversity is essential to food security, not only in terms of trade in agri-food commodities, but also within the domestic supply chain which consists of retailers, food manufacturers, wholesalers, and food service operations. If one major supply chain or company were to fail, for example due to economic failure, cyber-attack, or power failure, there could be a significant impact on availability of, and access to, food, if other parts of the supply chain were not able to help to fill the gap.

The size and diversity of the UK food retail and wholesale sector provides economic resilience. The greatest risk is in the retail sector, where the five biggest retailers have 60% of market share between them. The size and diversity of the food supply chain allows flexibility when an agri-food business fails, however the COVID-19 pandemic has placed pressure on all parts of the food supply chain – especially in the wholesale sector. The closure of the hospitality sector due to COVID-19 and other lockdown impacts resulted in financial distress across significant parts of the wholesale market. However, despite these pressures the wholesale sector maintained financial viability and food supply was not compromised.

Consumer behaviour

The UK’s just-in-time food supply chain relies on balancing supply with consumers’ demand. Consumer behaviour can cause sudden demand shocks and impact the effectiveness of the food supply chain. Given the UK’s history of secure food supply, consumer shocks resulting from stockpiling are rare. However, during disruption caused by the COVID-19 pandemic, industry proved effective in responding to increased demand, with government taking a supporting role. Consumer behaviour was characterised by a moderate increase in the amount of food purchased and in the number of shop visits made, rather than indiscriminate ‘panic buying’.

Cyber threats

The risk of cyber-attack to UK businesses is significant and continues to grow. It presents a threat to all CNI sectors. The nature of cyber-attacks means that they are varied and that attackers can adapt their approaches to their targets.

While the UK food supply chain has not been subject to significant attack, disruptions have been recorded in other areas of the globe with implications for their food security. Given the interconnectedness of the global food supply chain attacks elsewhere potentially also pose risks for UK food supply.

Indicator 3.1.1 Business resilience and response

Headline

The food supply chain is entirely owned and operated by private business, which is adaptable and flexible in responding to problems. Government monitors risks and works with industry to respond to emerging issues and maintain supply chains. A number of pressures in recent years, including the unprecedented stress of the COVID-19 pandemic, have threatened supply chains, but industry response, with government support, has succeeded in maintaining overall supply.

Context and Rationale

The threats which can impact the continuity of the UK food supply chain are diverse. The most significant risk of disruption lies in the agri-food sector's reliance upon other critical sectors, for example energy and transport. Disruption experienced in one sector could put food supply chain continuity at risk. Given the wide range of potential shocks and disruptions that might occur within the agri-food chain – whether affecting energy, labour, data communications, raw materials (known as key inputs), or transport – government and industry need to be confident that adequate continuity and contingency planning is in place to mitigate against these risks.

The capability, levers, and expertise to respond to disruption lie with the agri-food industry, which is experienced in dealing with scenarios that can affect food supply disruption. Government's role is to support and enable an industry-led response. This includes extensive and ongoing engagement to support industry in preparedness for, and response to, potential food supply chain disruptions.

Defra, other UK government departments, and the devolved administrations routinely identify, prepare, and respond to risks of national significance. This includes contributing to the National Security Risk Assessment, a classified and scientifically rigorous cross-government assessment of the most serious threats facing the UK and its interests overseas.⁷⁶ The National Risk Register (NRR) provides public information on the most significant risks that could occur in the next two years, and which could have a wide range of impacts on the UK.

The COVID-19 case study illustrates how the UK government, devolved administrations and industry collaborated effectively to mitigate against the risks of COVID-19. It also highlights the need for both industry and government to continue business continuity planning.

This indicator remains qualitative due to the commercial confidentiality of the agri-food sector.

Data and Assessment

The COVID-19 pandemic response demonstrated that the UK has a resilient food supply chain and a food industry which is good at responding to disruptions. Government actions, such as the temporary relaxation of UK Competition Law, supported industry in working collaboratively to minimise disruption, establish alternative supply routes and suppliers, and accommodate pressures in the supply chain.

The risks to the UK food supply chain from COVID-19 in 2020 were complex and unprecedented. The impacts were highly interrelated across the food supply chain and required a combination of mitigation measures to safeguard future continuity of supply. It is therefore difficult to identify the effectiveness of each individual mitigation measure, as it was the diversity of these actions which allowed product availability to steadily improve from late March 2020. It is clear that close collaboration between UK government, the devolved administrations and industry was critical to the effectiveness of the COVID-19 response.

Defra and the devolved administrations have continued to develop mitigations in response to evolving risks and issues associated with COVID-19. For example, in anticipation of border congestion in January 2021, government developed the Expedited Return Scheme (ERS) which allowed the prioritisation of empty food vehicles travelling from the UK to the EU through the Kent Traffic Management System. This allowed food vehicles to restock and return to the UK with fresh

⁷⁶ Cabinet Office, 'National Risk Register 2020' (2020), <https://www.gov.uk/government/publications/national-risk-register-2020>, p. 5.

supplies. The ERS did not need to be activated and congestion issues were managed at the border.

In recent years the agri-food sector has experienced significant challenges not limited to COVID-19. This has included although is not limited to; the March 2021 disruptions to global supply chains in the Suez Canal; shortages of key inputs such as CO₂; and labour and skill shortfalls in critical sectors. Although consumer choice may have been temporarily affected by these risks, the agri-food sector has ensured that there has not been an overall food shortage within the UK's supply chain.

Case Study 3.1 COVID-19 response

Overview

The COVID-19 pandemic widely impacted the UK food supply chain. The government played a supportive role, utilising well-established ways of working with the food industry. This support enabled an industry-led response that met the demand placed on it.

Background

This case study reflects the UK's response to COVID-19 across the agri-food sector at the start of the pandemic and the months that followed. Interventions differed in some ways across England, Scotland, Wales, and Northern Ireland. COVID-19 and its impacts still present risks to the UK's food supply despite the resilience of industry.

At the beginning of the crisis, early in 2020, risks to the UK's food supply began to materialise. These included:

- An upsurge in demand for certain products due to increased consumer purchasing. This represented a demand shock and led to temporary shortages of mainly non-food products, partly caused by a perception of potential shortages in the food supply chain.
- Increased staff absences due to rates of COVID-19 and requirements to self-isolate.
- Social distancing requirements meant businesses needed to adapt ways of working to maintain operability within their sectors, reducing capacity.
- Financial difficulties in food sector businesses, particularly due to closures of some sectors, for example, in hospitality.
- Minor international trade disruption and quotas leading to some temporary shortages of products.

- Difficulties for those classified as ‘vulnerable’ (financially vulnerable/shielded/elderly) in accessing food throughout the lockdown stages.

Discussion

Defra worked closely and quickly with the food sector, other government departments, and the devolved administrations to understand key issues and develop interventions to ensure food supply to the UK population. A number of government measures were put in place to maintain food supply chain resilience.

Stakeholder Engagement

Stakeholder forums were used to maintain regular communication between industry, government departments and the devolved administrations. These included:

- **The Food Chain Emergency Liaison Group (FCELG):** Defra’s long-established food industry sector working group for resilience and security issues. The group formally met regularly to identify and mitigate potential risks to food supply and interdependent sectors. The group also met in emergencies to act as a conduit between the food industry, UK government, and the devolved administrations. The FCELG has since been replaced by the Food Supply Resilience Planning Group, focusing on planning for medium- to longer- term risks to the food supply chain.
- **Food Resilience Industry Forum (FRIF):** a bespoke forum which was established at the start of the COVID-19 pandemic to support the logistical and technical operations of food supply across the UK food supply chain.
- **Sector specific industry meetings** aimed at providing effective communication between food sectors and government.
- **The Scottish Government’s Food Sector Resilience Group:** specific to Scottish stakeholders, but similar to FCELG and FRIF, with regular ministerial involvement. A Scottish Public Sector Food Forum was also established.

Temporary measures introduced by industry

- **Communications to the public** – government worked closely with retailers to develop and share messaging that aimed to help consumers understand the resilient nature of the supply chains and the impacts of their own actions.
- **Item limits on high demand goods (food and non-food)** – to allow time for restocking of popular products.
- **Specific shopping slots allocated for vulnerable groups and key workers both online and in person** – to ensure access to food.
- **Social distancing measures for public and staff** – to safeguard individuals from COVID-19 infection.

- **Enhanced cleaning measures** – to mitigate against the spreading of COVID-19.

Temporary measures introduced by government

Defra and wider government introduced a number of temporary mitigation measures:

- **Extended delivery and drivers' hours** – relaxing regulations on delivery times and driver regulations to allow a higher frequency of deliveries to and from stores.
- **Relaxation to UK Competition Law** – two separate exclusion orders (the Competition Act 1998 (Groceries) (Public Policy Exclusion) Order 2020) allowed grocery retailers and their suppliers (directly or indirectly) to collaborate effectively to prepare for and, if required, respond to potential disruption only in the instance that it related to specified 'qualifying activities'. This allowed more open discussion on areas such as stock levels, item limits, and store hours. A temporary relaxation to UK competition law was also made specifically for the dairy sector to allow further collaboration in the supply chain.
- **Relaxation of the plastic bag fee** for minimum contact between deliveries and more time-efficient deliveries.
- **Labelling easements** to allow for minor deviations on labels.
- **The Pick for Britain campaign and website** - a collaboration with industry to ensure sufficient seasonal labour for domestic food production.
- **Food parcels for shielded groups** - to ensure the clinically vulnerable had access to food during lockdown.
- **Government support for businesses** experiencing increased costs and disrupted cash flow as a result of COVID-19. This included the Coronavirus Job Retention Scheme, the Coronavirus Business Interruption Loan Schemes for small and large businesses (CBILS/CLBILS) and the Bounce Back Scheme for small and medium enterprises (SMEs)
- **The Trade Credit (TCI) Reinsurance Scheme** which provided £10bn of guarantees on business-to-business transactions currently supported by TCI, backdated to April 2020 and running to 31 December 2020.
- **Legislation supporting information sharing agreements** between industry and government. Defra included provisions in the **Coronavirus Act (2020)** which allowed government powers to obtain information from industry if necessary in a disruption. However, these provisions were not brought into effect due to the continued collaborative relationship between industry and government.

- **Adding essential food items to the Category 1 (CAT 1) goods list during COVID-19 response** - to allow inclusion in mitigations where appropriate, such as prioritisation on commercial freight and access to hauliers.

Trends

The government will continue to review threats and risks as part of its responsibilities to food as a Critical National Infrastructure (CNI) sector. The risks exposed through the COVID-19 pandemic and transition planning for EU Exit have highlighted the significance of business continuity planning within industry and helped inform risk mitigation as part of their operations. Government intelligence suggests that broadly, industry continues to prioritise business continuity planning where possible. However, this is more likely to be possible for larger agri-food companies than for small and medium-sized enterprises (SMEs).

Indicator 3.1.2 Energy dependency in the food sector

Headline

The food supply chain is highly dependent upon the energy sector and vulnerable to both short-term supply disruption and medium-term energy price fluctuations. Demand for energy from the food and beverage sector has declined in the last 20 years, reflecting increased energy efficiency, but the sector remains reliant on imported natural gas. Demand has remained consistent for the agriculture sector for the past 20 years.

Context and rationale

The food supply chain depends directly and indirectly upon energy through its reliance upon common energy sources such as electricity, natural gas, and petroleum products. This dependency is evident across the supply chain, through production, processing, packaging, distribution, transport, retailing and consumption of food itself. Energy security is vital to the functioning of the whole economy. The food supply chain has high energy demands and is vulnerable to disruptions to energy supply or changes in energy prices. Capturing the energy intensity of the food supply chain is complex because it spans several sectors not all of which are purely food related. If the UK's energy supply is not secure, the food supply chain will be vulnerable to disruptions.

Fluctuations in the energy market may affect the prices of commodities or key inputs such as carbon dioxide (CO₂), and thus the economic viability of food businesses. Oil prices represent one of the most important drivers of change in global food commodity prices. Consumer prices also depend on wider factors including agri-food import prices, domestic agricultural prices, domestic labour and manufacturing costs, and Sterling exchange rates.

The UK meets its energy needs through production and trade. In 2020, total energy net import dependency was 28% of primary supply. This was 7.2 percentage points lower than 2019 and the lowest level since 2009, largely a result of lower demand during the COVID-19 pandemic.

For oil, import dependency varies by product. The UK is a net exporter of petrol meaning all demand could be met through indigenous production alone in the event of disruption. In 2020, the UK met close to 60 percent of road diesel demand through indigenous production. The UK imports diesel from a large number of sources which increases security of supply. The UK is self-sufficient in the production of gas oil (red diesel) which is commonly used by agricultural vehicles.

In recent years around half of natural gas demand was met through indigenous production, in 2020 this was 54%. The remainder is met through imports via pipelines and of liquefied natural gas (LNG). In 2020, a third of supply was met through imports from Norway. The UK has a large number of other import sources which increases security of supply.

A small proportion of UK electricity supply is provided by imports. In 2020, net imports accounted for 5.4% of supply. Whilst domestic generation capacity is sufficient to meet UK needs, interconnectors can provide additional flexibility and reduce costs. Northern Ireland and the Republic of Ireland have a single electricity market, by which electricity can flow freely across borders, balancing the market for the whole island of Ireland.

The Department for Business, Energy and Industrial Strategy (BEIS) is the lead UK Government Department for the risk of major power disruption. BEIS works closely with the Cabinet Office and other government departments to ensure that appropriate preparedness and mitigation measures are in place so that impacts from energy supply disruption are minimised.

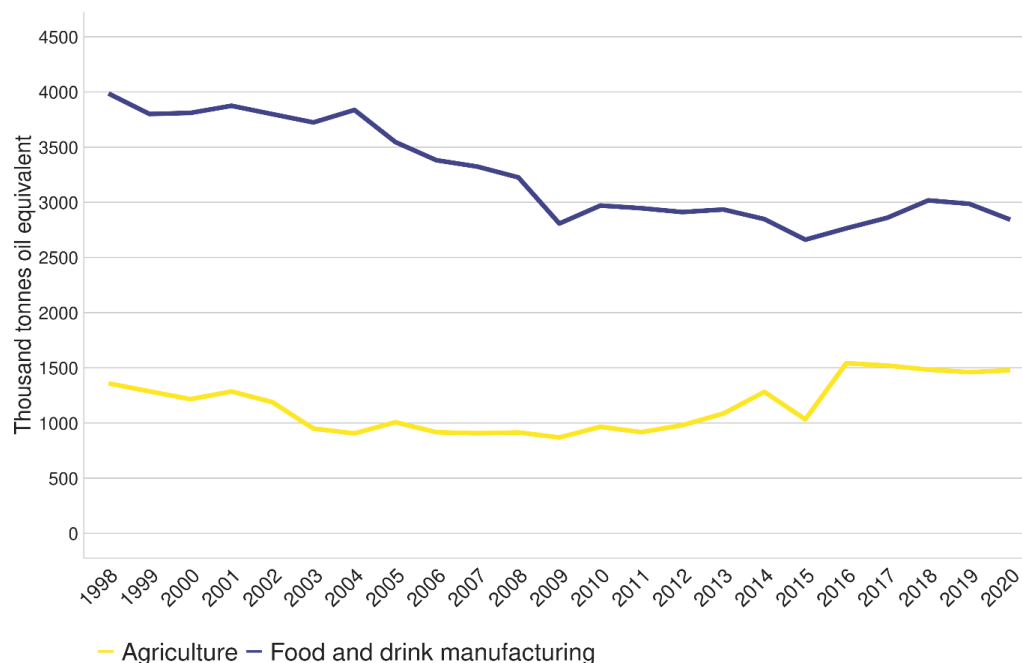
This indicator includes data collected from BEIS through the Digest of UK Energy Statistics (DUKES) to illustrate energy demand in the food and drink manufacturing and agriculture sectors. A case study is provided on the major power disruption which took place on Friday 9 August 2019.

Data and assessment

Indicator: Aggregate energy demand for agriculture and food and drink manufacturing

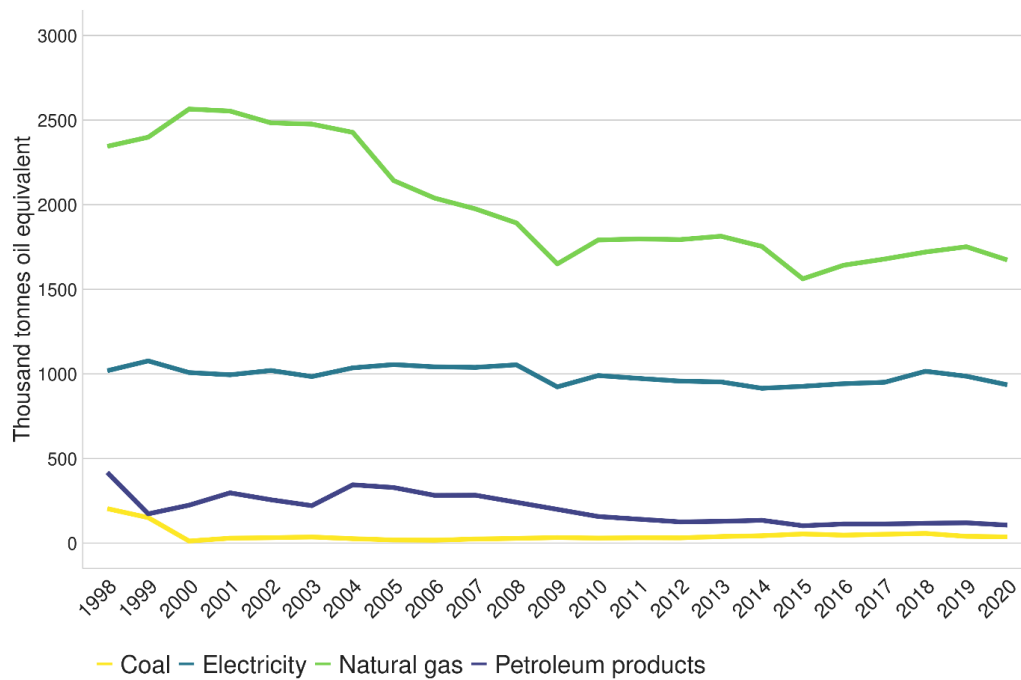
Sources: DUKES

Figure 3.1.2a: Aggregate energy demand for agriculture and food and drink manufacturing.



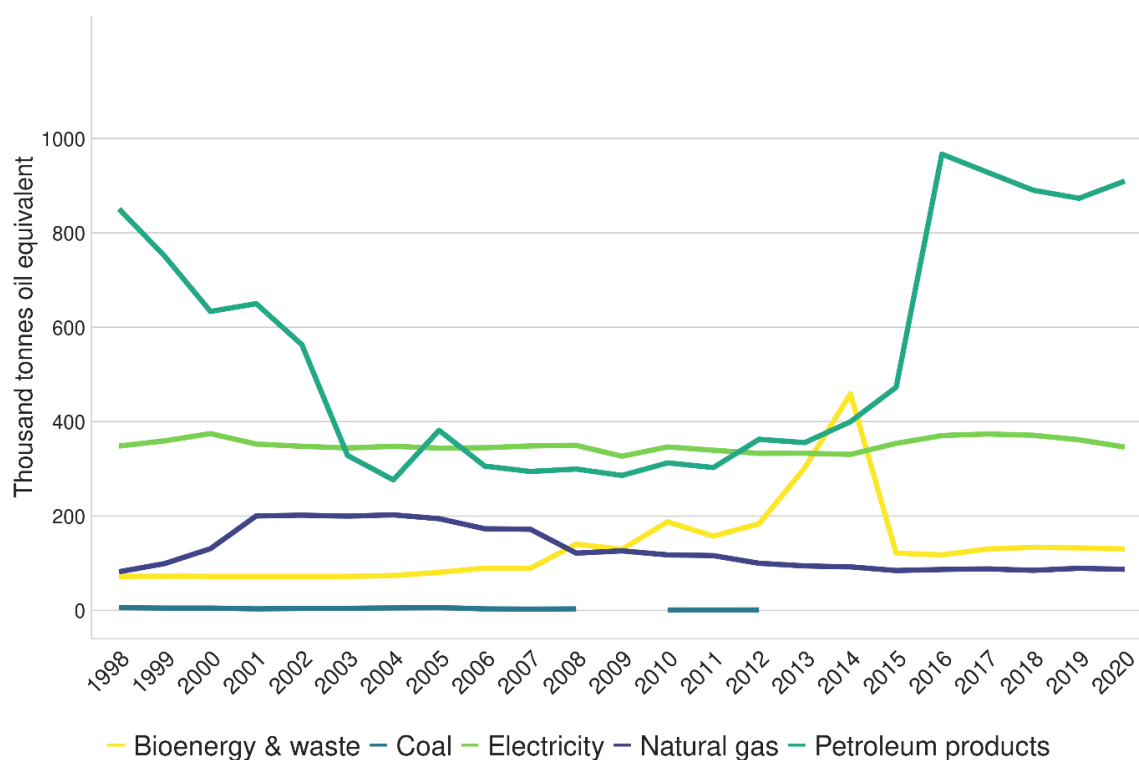
In 2020, natural gas accounted for close to 60% of demand in the food and drink manufacturing sector, whilst electricity accounted for a third. Although minimal, demand for energy from bioenergy and waste has increased in recent years in line with substantial growth in renewable energy production. Continuing this trend in line with Net Zero targets may be challenging for manufacturing processes that use high temperature heat sources for which electricity is less effective than gas/petroleum products.

Figure 3.1.2b: Energy demand by energy type in the food and drink manufacturing sector.



Overall total demand for energy by the food and drink manufacturing sector has remained stable in the last 20 years. Natural gas meets 60% of energy needs followed by electricity at a third.

Figure 3.1.2c: Energy demand by energy type in the agriculture sector.



Demand for energy in the agricultural sector shows an increase in 2016, which is somewhat explained by methodological updates. This includes apparent increased demand for petroleum products from 2015, in fact due to a change in method of estimating sector demand for oil products, and a peak in bioenergy and waste in 2013-14.⁷⁷ To note, further revisions and back casting were delayed due to COVID-19 and will likely be published in 2022.

Petroleum products play an important role in the agricultural sector, meeting more than 60% of energy needs. Within the DUKES balance this largely consists of burning oil, used for drying of crops and heating, and gas oil (commonly known as red diesel) used to power non-road machinery (NRMM). In addition, a small amount of propane is used, mainly for heating (most commonly on poultry farms). Indirect agricultural demand for energy inputs such as fertiliser are not captured within this sector of the balance, but in demand for energy by the chemical industry.

The drop off in demand for coal is in line with reducing coal demand across the board.

⁷⁷ BEIS, 'Change to method of estimating sector demand for oil products' (2019), <https://www.gov.uk/government/publications/energy-trends-june-2019-special-feature-article-change-to-method-of-estimating-sector-demand-for-oil-products>

Trends

In absolute terms, energy used in food and drink manufacturing has generally been declining over the last 20 years (more significantly on a per capita basis), reflecting increased energy efficiency. For agriculture, energy use has been more stable, with a slight upward trend between 2016 and 2020. Energy use in agriculture is also likely to be impacted by other inputs such as fertiliser, which is not reflected here.

Case Study 3.2 9 August 2019 Power Outage: Food Sector Impact

Overview

On Friday 9 August 2019, over 1 million customers were affected by a major power disruption that occurred across England, Wales, and some parts of Scotland. Though the power disconnection itself was relatively short lived - as all customers were restored - the knock-on impacts to other services were significant. This event demonstrated the need for essential service providers, including those in the food sector, to have robust business continuity plans in place for disruptive events such as power outages.

Background

The 9 August power disruption was triggered by a lightning strike to an overhead transmission line and the near simultaneous loss of a number of generators. The loss of generation caused an imbalance between the amount of electricity being generated and the amount of electricity being used by businesses and the public. This triggered an automatic protection system (known as Low Frequency Demand Disconnection) which had the effect of disconnecting over 1 million customers to address the imbalance and protect the electricity network from a total shut down.

Although all customers were restored within 45 minutes, a number of sites and services were impacted including:

- Rail – 371 cancelled services, 220 part cancelled services and 870 delayed trains; some signalling assets were also affected. Major delays extended into Sunday 11 August.
- Hospitals – 4 hospitals automatically switched to their back-up generators.
- Water Treatment – 3,000 customers experienced a reduction in water pressure and 1 water treatment plant needed to switch to its back-up generator.

- Airports – 2 airports automatically switched to their back-up generators.

Discussion

The majority of these services were not disconnected by the Low Frequency Demand Disconnection Scheme. Instead, the service disruptions were caused by protection systems under the control of individual essential service operators, which reacted to the disturbance on the electricity network.

A number of investigations were carried out by the impacted industries to better understand why internal safety systems reacted to the frequency and voltage fluctuations in the way that they did and whether any mitigations are available. For example, the rail industry took proactive steps to assess why some trains stopped operating when the frequency on the power network dropped. Several engineering and incident response solutions were introduced to ensure resilience to future potential power disruptions. These are set out in the Office of Rail and Road's report on the rail disruption.⁷⁸

Impacts were further exacerbated by the ineffectiveness of essential services' business continuity plans. Guidance developed by the Energy Emergency Executive Committee (E3C) was developed and cascaded to operators of essential services to ensure their preparedness and resilience to a range of possible power disruption scenarios. The E3C includes industry, regulators, UK government and devolved administrations who work together to build resilience in energy supplies

Whilst the power outage did not have a large impact on the food sector - no disruptions were reported across the food production, distribution or sale - this event illustrates the importance of adequate preparation and planning for power disruptions, to minimise any disruption to customers and the public.

⁷⁸ Office of Rail and Road, 'Report following railway power disruption on 9 August 2019, (2020) <https://www.orr.gov.uk/media/10752>

Indicator 3.1.3 Transport dependency in the UK

Headline

The functioning of the food supply chain depends on an efficient transport network, especially the road network. Just in time supply chains are sensitive to disruption to transport, particularly in road freight. Overall delay times on the Strategic Road Network, responsible for two thirds of all freight, have increased over the last five years.

Context and rationale

The transport sector plays a strategic role in connecting the UK food supply chain. It links UK ports, farms, factories, retailers, food service providers, and consumers. It is essential to the import and export of food. Food is primarily transported by sea, road and rail. Food products were the most common commodity imported by UK-registered heavy goods vehicles in 2020, with 1.2 million tonnes imported, accounting for 35% of all imports.^{79,80}

The UK food supply chain is dependent upon the use of 'just-in-time' logistics, which allow the transportation of food within short timeframes and as close as possible to when it is needed. For fruit, vegetables and other items with a short shelf life, this allows food to be as fresh as possible and avoids food waste. These transportation systems are highly efficient, regular, and predictable, and allow consumers to have widespread access to food on supermarket shelves. Food security disruption could however occur if the continuity of the transportation system was compromised. The reasons for transport disruption could include, for example, border delays, extreme weather events, flooding or any other accidental or malicious disruption affecting multiple points of the transportation network. As a result of the just-in-time approach, retailers do not usually hold substantial stock on-site, meaning that the supply chain is sensitive to sudden increases in demand and disruption is likely to be felt relatively quickly. However, on such occasions, the UK is unlikely to experience an overall shortage of food, though some products may experience temporary disruptions. On such occasions products in short supply may be able to be sourced from alternative suppliers.

⁷⁹ 35% includes food products, beverages and tobacco.

⁸⁰ DFT, 'International Road Freight Statistics', (2021)

<https://www.gov.uk/government/statistics/road-freight-statistics-2020>

The COVID-19 pandemic and the challenges related to EU Exit have illustrated how reliant the food supply chain is upon the transport sector. During the pandemic, despite shocks to the food system, food supply was maintained with only temporary disruptions. Although there are ongoing recruitment and retention challenges of Heavy Goods Vehicle (HGV) drivers which has caused significant challenges within the transport sector. Certain areas of the UK, in particular remote and island communities, are more vulnerable to disruption occurring in the transport system due to the length and complexity of their supply lines. EU Exit has also created new challenges for supply of food to Northern Ireland, which has in general a more complex supply chain due to the greater distances and ferry connections needed to ship goods from Great Britain.

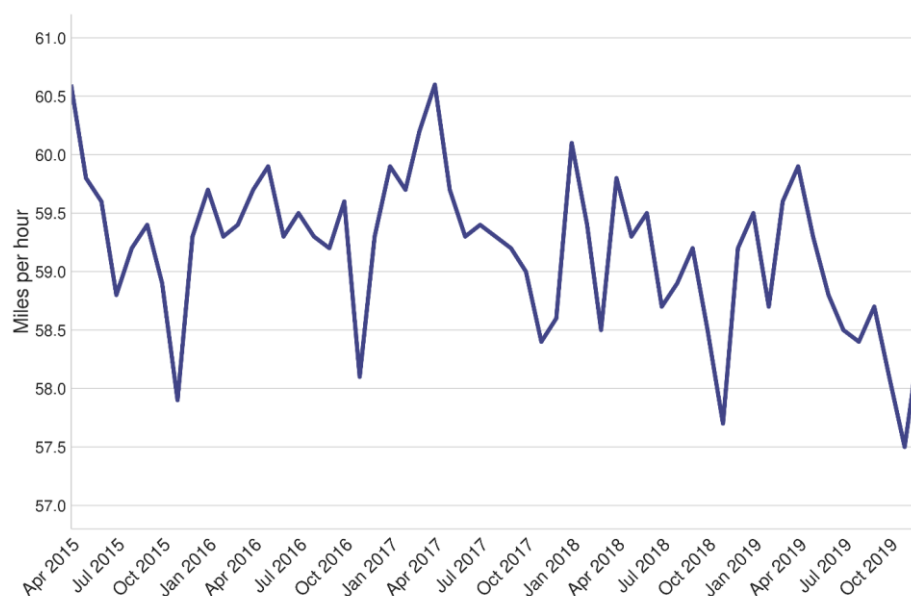
As all food is transported at least part of the way via road, this indicator looks at the Road Congestion and Travel Time Statistics collected by the Department for Transport (DFT) which cover the Strategic Road Network (SRN) in England. The SRN is the most heavily used part of the national road network covering motorways and major A roads, and carries a third of all traffic and two-thirds of all freight. Delay indicators are only available for the SRN in England. However, as a high proportion of food to all parts of the UK travels through England, this indicator is relevant to the food supply of the entire UK.

Data and Assessment

Indicator: Road Congestion and Travel Time Statistics

Sources: Strategic Road Network

Figure 3.1.3a: Average speed on the Strategic Road Network (SRN).

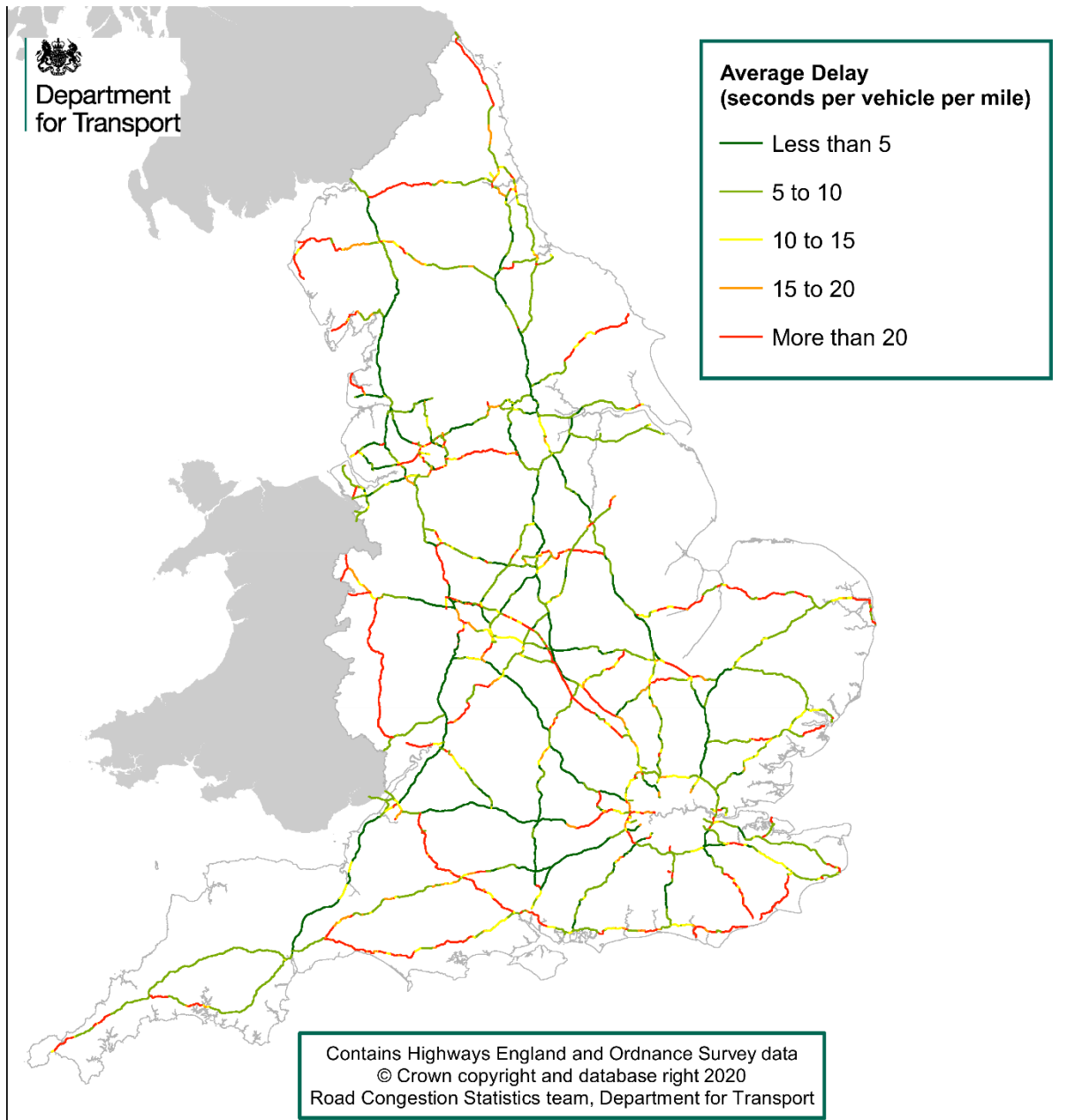


This indicator only includes data up to the end of 2019 as from March 2020 the average speed increased due to there being fewer vehicles on the road during the first COVID-19 lockdown. The DFT has published a report on the impact of the pandemic on travel time measures, including estimates of what average speeds would have been in 2020 without coronavirus impacts.⁸¹

The average monthly speed on the Strategic Road Network in England varied between 57 and 61 miles per hour from 2015 to 2019. Each year the month with the slowest average speed is November, while April often has the highest. There is seasonality within the congestion data, with higher speeds experienced around April and slower speeds in November, after the clocks change. This change causes a slight increase to average delays which might be due to darker mornings causing people to get up later, therefore increasing the number of people using the roads during peak times. In April, when the clocks go forward, the average delay is slightly lower, which could be attributed to people getting up earlier with the lighter mornings, decreasing the number of vehicles on the roads during peak times. This seasonality is generally incorporated into planning by hauliers and other logistics businesses.

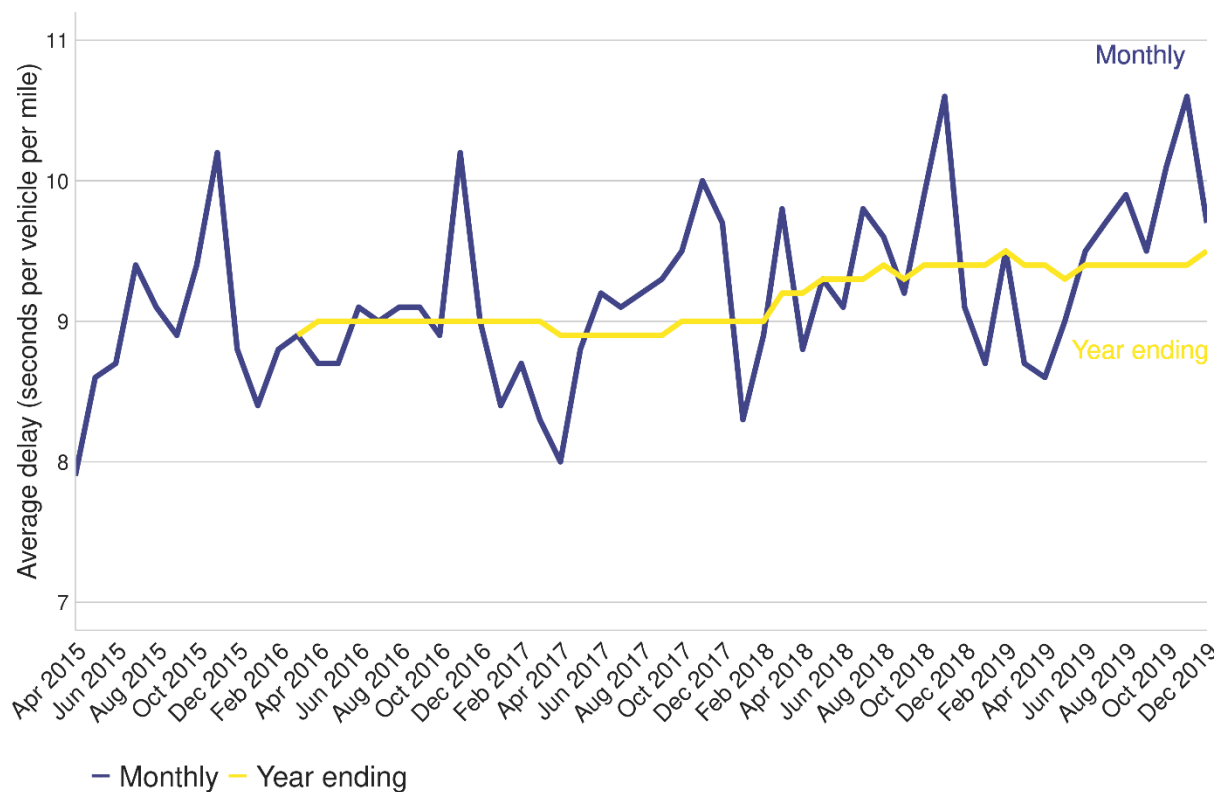
⁸¹ DFT, 'Impact of the coronavirus (COVID-19) pandemic on travel time measures' (2020), <https://www.gov.uk/government/statistics/travel-time-measures-for-the-strategic-road-network-and-local-a-roads-july-2019-to-june-2020/impact-of-the-coronavirus-covid-19-pandemic-on-travel-time-measures>.

Figure 3.1.3b: Average delay on the Strategic Road Network (SRN) in England, 2019.



The average delay on individual main carriageway links was less than 10 seconds across England in 2019. Around major cities, the delay was approximately 20 seconds per vehicle per mile (spvpm). This could be due to the high demand on the network around them, relative to their capacity. The roads with the greatest year-on-year increases in delay also tended to have the greatest decreases in average speed. These were primarily in areas with ongoing roadworks, implemented as part of the Road Investment Strategy (RIS).

Figure 3.1.3c: Average delay on the Strategic Road Network (SRN).



For 2019, the average delay on the SRN was estimated to be 9.5 seconds per vehicle per mile (spvpm) compared to speed limits. This is 0.9% higher compared to 2018, which means on average there were more delays in 2019 than 2018. 2019 is used as a reference year because the travel restrictions under COVID-19 in 2020 affected traffic flow in a way that was atypical.

Since 2016, there has been a gradual increase in the average delay on the SRN in England, although the number of vehicles travelling on it over that time has increased at a greater rate.

Average speeds on the SRN have decreased slightly by 0.5 miles per hour (1% decrease) since 2016, while in the same period average delays have increased by 0.5 spvpm (5% increase).

Overall, continuity of the SRN system is expected to be maintained. There has been a slight worsening in average delay times which can be explained by the decrease in average speeds due to roadworks. However, in the past 5 years there have been no significant disruptions to just-in-time supply chains, suggesting high food security for food already within the UK.

Trends

In absolute terms there has been a slight increase in average delay times on the SRN, although this is not significant. It will be important to monitor any changes resulting from structural breaks caused by COVID-19 and the UK's exit from the EU. Longitudinal evaluation of the SRN will be needed to determine its resilience.

The road freight sector has been impacted by a reduction in the number of drivers. An estimated 268,000 people were employed as HGV drivers between July 2020 and June 2021. This is 39,000 fewer than the year ending June 2019, and 53,000 fewer than the peak of 321,000 HGV drivers during the year ending June 2017.⁸² The UK government is taking action to address this shortage.⁸³ This includes attracting drivers back to the industry by investing £32.5 million to improve facilities across the country, to investing £17 million to create new HGV Skills Bootcamps to train up to 5,000 more people to become HGV drivers in England.

Indicator 3.1.4 Points of entry in the UK

Headline

Food imports from the EU, particularly short shelf-life goods, are concentrated on the Short Strait (Dover and the Channel Tunnel). The risks of this concentration are discussed in **Indicator 3.1.5**. Imports are otherwise spread across a number of ports of entry, with no one port dominating non-EU imports.

Context and Rationale

The UK's points of entry are the places where goods enter the country from abroad. Food from overseas, as well as animal feed and fertiliser inputs for domestic agriculture, enter the country through these international gateways. The following analysis focuses mainly on UK seaports, which are the most important of those gateways. The Channel Tunnel and airports (particularly Heathrow) handle the remainder of the UK's food imports, around 15% of the total.

⁸² Office for National Statistics (ONS), 'Fall in HGV drivers largest among middle-aged workers' (2021)

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/fallinhgvdriverslargestamongmiddleagedworkers/2021-10-19>

⁸³ UK Government, 'HGV driver shortage: UK government response', (2021)

www.gov.uk/government/topical-events/hgv-driver-shortage-uk-government-response.

Understanding the spread of imports across the UK's ports helps to identify key infrastructures such as port facilities, roads and railways which connect those ports to the food supply chain. Food security could be compromised where risks are not spread between a sufficient number of ports, or where there is a lack of flexibility to switch between suitable ports, should the need arise.

UK ports are also subject to a variety of risks that may be geographically correlated, such as tidal surges on the East Coast. The impact of any disruption to ports would depend on the length and scale of the disruption, as well as the ability to find alternative points of entry in the timescales required.

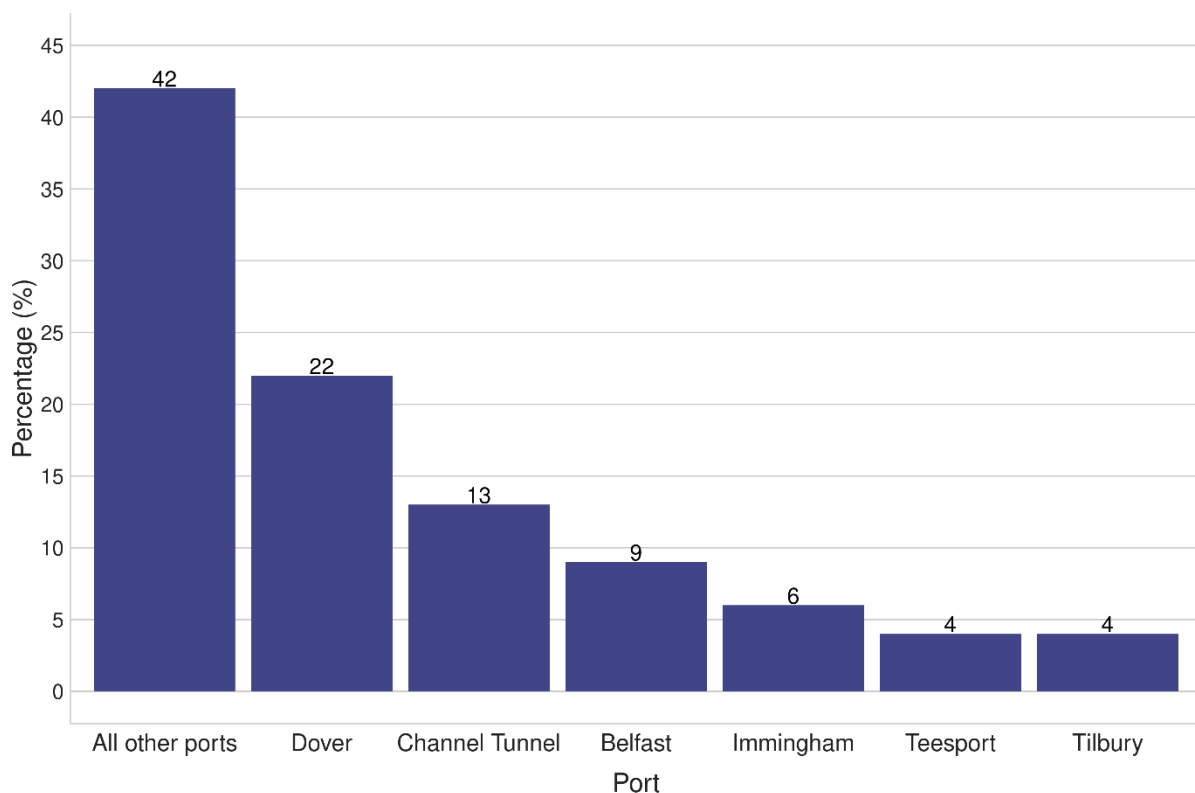
A further consideration is the dependency of the UK on the resilience and regulatory approach of ports in the EU from which the bulk of UK imports depart. This varies between countries like France, Spain, and the Netherlands, and affects the ease with which goods flow to the UK.

Data and Assessment

Indicator: Percentage share of UK food imports by port and mode of transport

Source: A report by Baker P, PRB associates (2020), commissioned by Defra

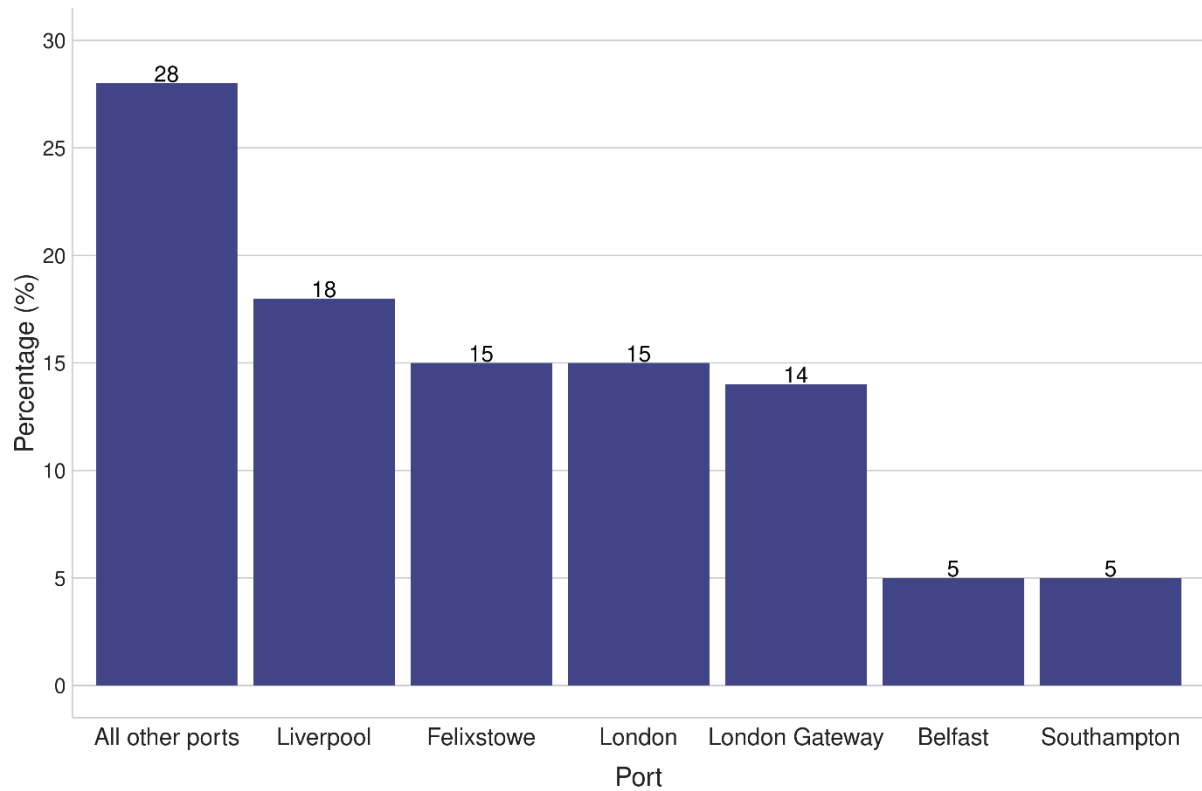
Figure 3.1.4a: Percentage share of UK food imports by port (EU countries, 2018).



The graph above shows the main ports used for UK food imports from the EU in 2018. The top six ports responsible for EU imports account for 58% of total shipments. The port of Dover represents the biggest source of EU food imports, at

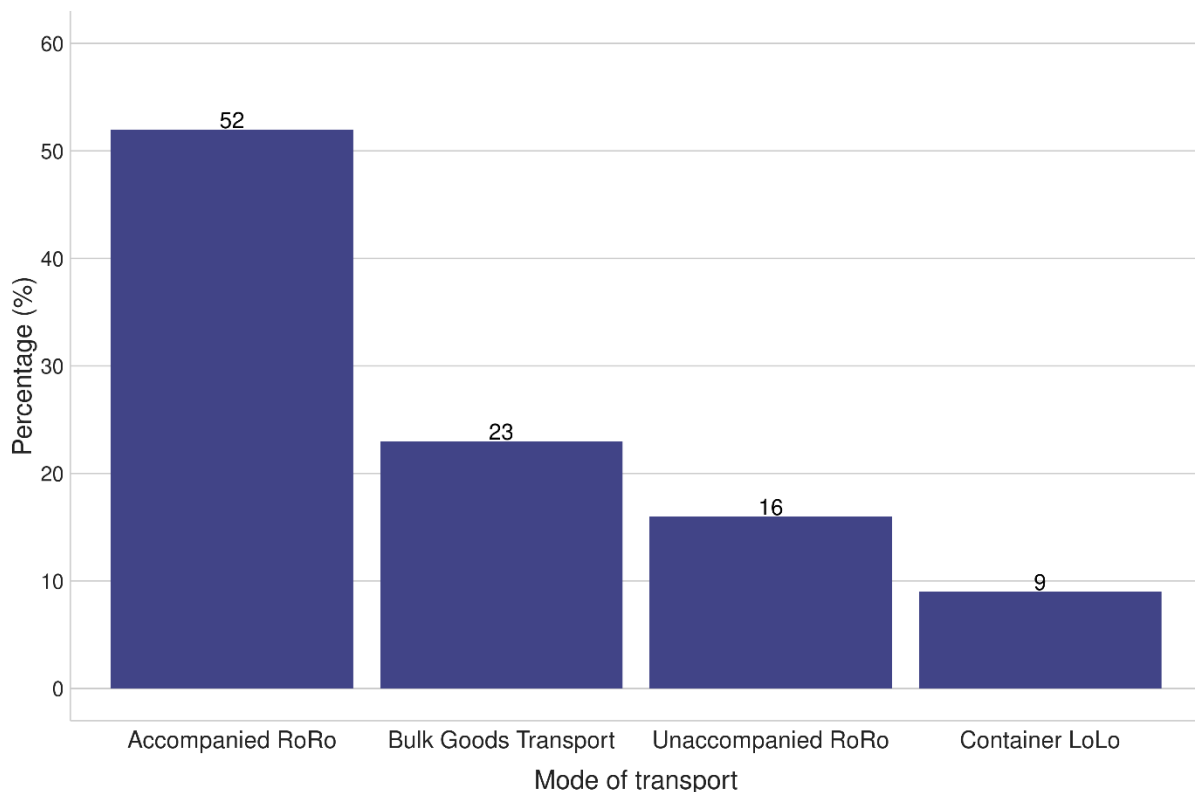
22% of the total. In 2018, the UK imported 28 million tonnes of food products from the EU.

Figure 3.1.4b: Percentage share of UK food imports by port (non-EU countries, 2018).



Non-EU imports are more concentrated within the top 6 ports. The graph above shows that the top 6 ports account for 72% of non-EU imports, with Liverpool the biggest source of shipments, at 18%. In 2018, a total of 11.3 million tonnes of food products were imported from non-EU countries.

Figure 3.1.4c: Percentage share of UK food imports by mode of transport (EU countries, 2018)



Although equivalent data is not available for non-EU countries, the graph above demonstrates the split of UK imports from EU countries by mode of transport. Accompanied 'roll on roll off' (RoRo) accounts for just over half of EU imports, at 52% of the total. This is when freight is carried in trailers attached to a road goods vehicle, on sea-going vessels fitted with ramps for discharging without the use of cranes. The next most significant is Bulk Good Transport, accounting for 23% of the total and involving the import of agricultural commodities, such as sugar and grain. Unaccompanied RoRo (freight carried on unattached trailer) and container 'load on load off' (LoLo) (cargo carried in 20-foot and 40-foot containers) account for the remaining quarter of food imports from the EU between them.

In aggregate, both EU and non-EU food imports, via all modes of transport, are well spread across a number of ports of entry, with no port having a dominant share. Only simultaneous disruption to several ports would be serious enough to have an overall effect on UK food supply.

There are clusters of ports used for handling food import traffic, for instance in the South East and North East regions. Their geographical proximity suggests that they could share some risks of disruption from extreme events such as coastal flooding. A tidal surge on the east coast could have a concurrent impact across multiple key ports in the UK and on the European mainland. Government, ports, and many businesses have plans to reroute goods to other ports in this event, but the combined effect of rerouting all east coast traffic would likely cause delays and

congestion at other ports.⁸⁴ The just-in-time nature of the supply chain makes it vulnerable to this kind of disruption, with the greatest impact on availability of fresh produce.

However, the resilience of port infrastructure is not solely a matter of having a range of ports to potentially divert to. Alternative ports must have the correct protocols, staffing capacity and suitable infrastructure to receive food imports and different cargo types. A port's capacity and configuration govern both the types and sizes of sea-going vessels that can be received, and therefore the types and quantity of food cargo that can be discharged there. Currently, there is a data gap at both the individual port and UK level, to allow for an accurate assessment of the ease with which food import traffic can be switched between ports in the event of disruption. This is an area which could be considered for future Food Security Reports.

Trends

There has not been a significant change in the diversification of EU and non-EU food imports in recent years. It will be important to monitor any changes resulting from the UK's exit from the EU, or any new developments in port capacity, such as the planned Poole-Tangier route.

Indicator 3.1.5 Food imports via Short Strait

Headlines

There is a degree of reliance on the Short Strait import routes for some food products, especially perishable goods such as fresh fruit and vegetables. In the event of disruption to the Short Strait, it is expected that the use of alternative points of entry could decrease the impact to food supply.

Context & Rationale

The Short Strait routes refer to the ferry connections between the port of Dover and Calais and Dunkirk, and the Channel Tunnel railway connection between Folkestone and Calais. The Short Strait routes are the shortest routes from Dover to continental Europe, and offer advantages in time, cost, and frequency of

⁸⁴ Achuthan and others, 'Resilience of the food supply to port flooding on east coast' (2015), http://randd.defra.gov.uk/Document.aspx?Document=13179_SynthesisReport.pdf.

services. The short journey times are particularly important for the transport of goods with a short shelf life, such as fresh fruit and vegetables.

Given the perishability of many food products and the just-in-time basis of the food supply chain, food importers have increasingly used these routes through shipping in accompanied trailers. An over-reliance on the Short Strait routes could mean that an issue with one or both of them could significantly disrupt the supply of some imported food products.

It is estimated that 36% (10 million tonnes) of food imports from the EU arrived via the Short Strait in 2018, which equates to around 25% of total UK food imports. Given that around half of the food consumed in the UK is imported, it can be estimated that around 12.5% of food consumed in the UK is being imported via the Short Strait.

Data and Assessment

Indicator – Breakdown of the Short Strait food imports from the EU

Source: - The source of all the data in this section is a report by Baker P, PRB associates (2020), commissioned by Defra

Figure 3.1.5a: Percentage breakdown of the Short Strait food imports from the EU

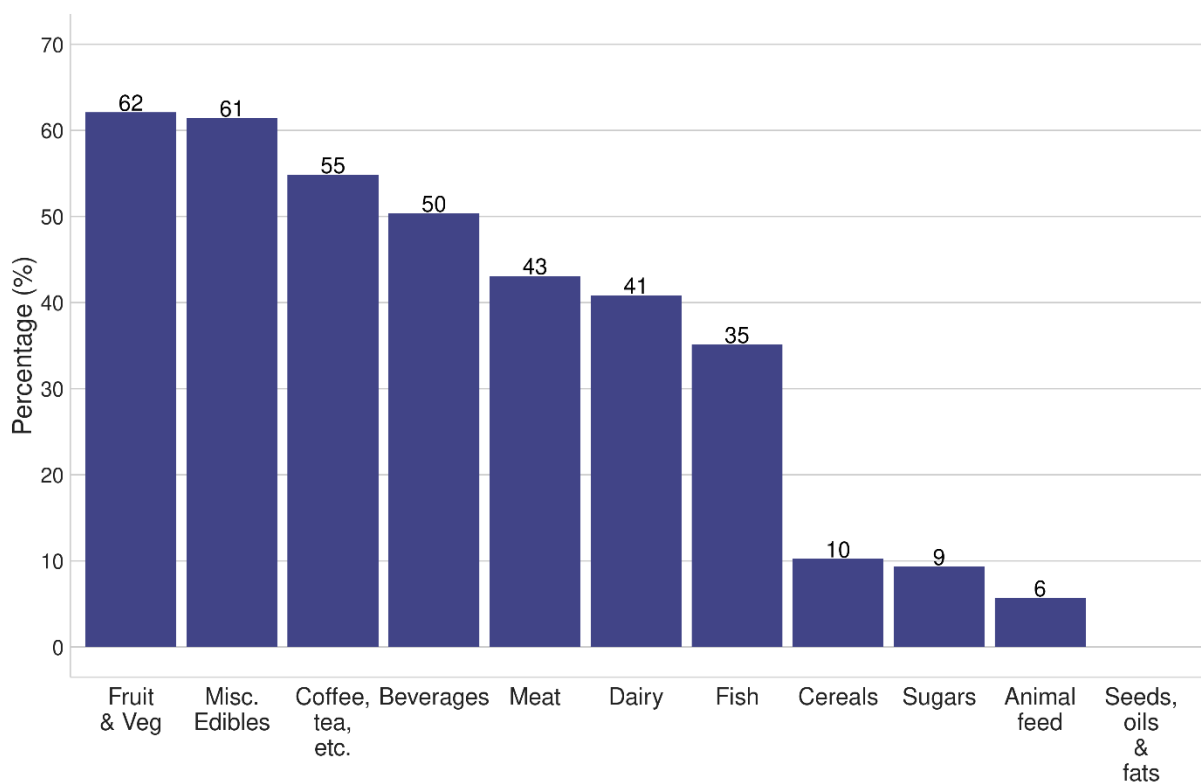
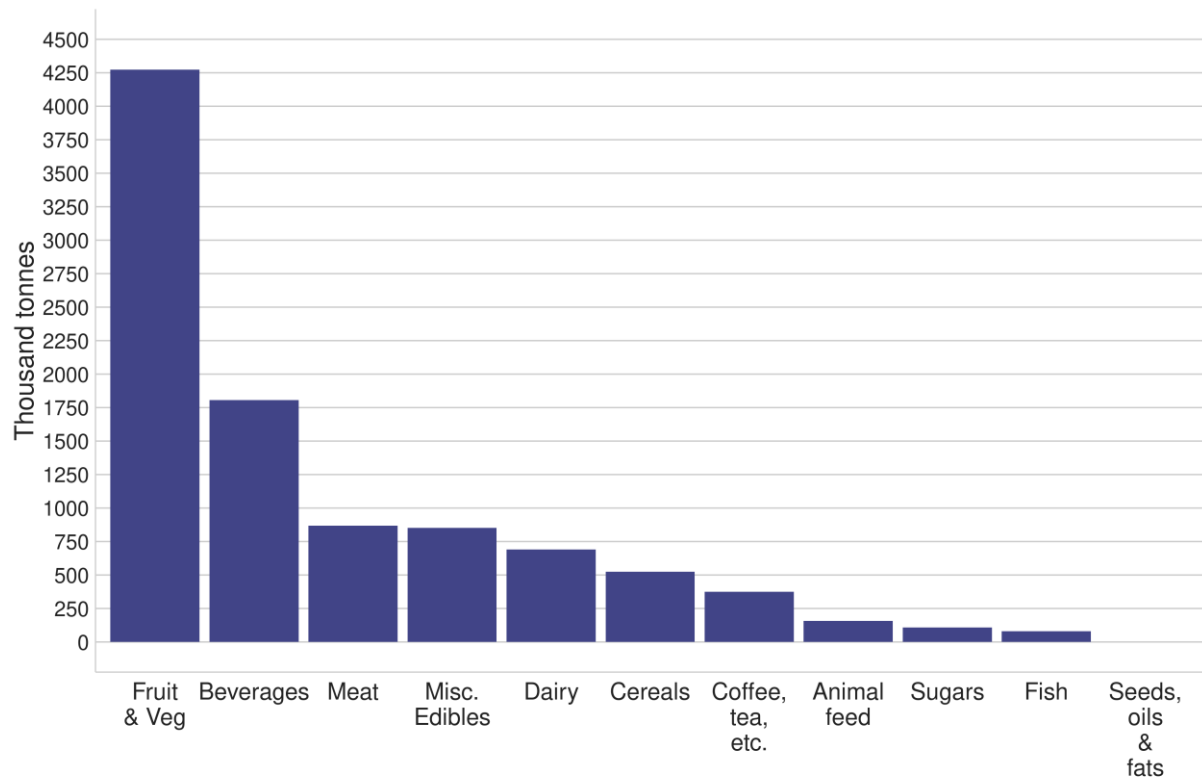


Figure 3.1.5b: Breakdown (in tonnes) of the Short Strait food imports from the EU.



The graph above presents volumes data on the breakdown of food imports from the EU and their corresponding shares of total food imports from the EU in 2018. The UK is reliant on the Short Strait for certain food groups, in particular: fruit and vegetables (62% of fruit and vegetables imported from the EU arrive via the Short Strait), meats (43%) and dairy (41%). Of the total EU food products imported via the Short Strait, it is estimated that 44% are fruit and vegetables, 19% are beverages, 9% are meats, and 9% are dairy.

In addition, there are 0.3 million tonnes of non-EU food imports that arrive via the port of Dover. Of those imports, 98% are “Edible fruit and nuts; peel of citrus fruits or melons.”

There is some reliance on Short Strait routes for food imports of certain products, there is potential for these imports to be redirected to other ports on the south and east coasts of England in the event of disruption at Dover and the Channel Tunnel.

Examples of ports that may be suitable for this substitution include Harwich, Portsmouth, Immingham, Hull, and Killingholme. The ability of these ports to take on additional shipments at potentially short notice will be determined by factors including:

- current utilisation levels
- competing demand for spare capacity from other sectors
- having the relevant infrastructure
- trained inspection staff in place to accommodate increased traffic flows

- the ability of industry to reconfigure their supply chains.

Finding extra capacity could present significant challenges given the volumes involved. In an ordinary week, around 36,000 trailers use the Short Strait crossings, compared to 20,000 trailers on the North Sea and Western Channel routes, all of which are much longer sailings. The port of Dover handled 1.07 million imports of road goods vehicles in 2020, while Harwich, Portsmouth, Immingham, Hull and Killingholme handled 220,000 combined.

Trends

There has not been a significant change in the level of reliance on the Short Strait routes in recent years, but the UK's exit from the EU could affect this in the future.

Indicator 3.1.6 Border closures

Headlines

Border closures intended to control disease have the potential to threaten food imports. Border issues may have different dynamics and affect freight differently. The below case studies draw on two border closures experienced during the COVID-19 pandemic; one imposed on the UK by France, and the other imposed by the UK on Southern Africa and South America, neither of which caused serious supply issues.

Context & Rationale

Border closures are the decision taken by a country to close its borders to people or goods entering from elsewhere. Border closures limiting the travel of people were used by the UK and other nations during the COVID-19 pandemic to limit the spread of the virus.

Border closures pose a risk to the food supply chain as the UK imports around 45% of the food it consumes. Consequently, border closures can cause temporary disruptions to the supply of certain food items, particularly fresh products from the EU as these often arrive via road accompanied by a driver. Freight which arrives unaccompanied is less susceptible to the impact of a border closure that prevents hauliers from entering the UK. This is because no single person is accompanying the food between countries. The container with the food inside is loaded onto a ship and then collected by another driver at the destination port.

Although disruption to certain foodstuffs may occur, border closures are unlikely to be a threat to overall food security as the UK's food supply is diverse. In addition, accurate data, real-time intelligence sharing, and cross-government collaboration bolster the capacity of both government and industry to respond to border closures. However, delays to shipments of fresh food can lead to shortages on shelves due to the just-in-time supply chain, and economic losses through spoilage. This section will include two case studies on the French-imposed border closure in December 2020, and the UK imposed border closures for Southern Africa and South American countries in January 2021.

Case Study 3.3 French Border Closure, December 2020

Overview:

In December 2020, France closed its border with the UK as a consequence of the Alpha variant of COVID-19 circulating amongst the UK population. France banned the entry of people, including accompanied freight (both sea and air), from the UK at 23:00 Sunday, 20 December for 48 hours.

Travel bans were also imposed on the UK by other countries, including the Netherlands, Belgium, and Italy, though these restrictions did not include accompanied freight.

Background:

The border closure was a threat to the UK's food supply due to the volume of food imports that come from or through France to the UK, and because of the lack of warning, which gave the UK little time to respond.

The UK imports many food items directly from France, such as 13.4% of cheese imports, 32.4% of yoghurt imports, 27.6% of apple imports, and 19.4% of bread, crispbread, and savoury imports. France accounts for 9.1% of the UK's total food imports.

The France - UK route is also important for food imports from other EU nations. Many of these imports arrive accompanied, so the total ban on both people and accompanied freight posed a significant threat to the UK food supply.

This manifested in two ways. Firstly, hauliers transporting food were unable to travel to the UK from France. Secondly, hauliers were stuck in the UK and unable to return to mainland Europe to pick up more food.

Discussion

Despite the potential threat, no serious disruption to the supply of food into the UK occurred. The interruption was relatively short-lived, with the ban on accompanied freight lasting only 48 hours. Many businesses had sufficient stockpiles to mitigate this disruption to supply for this period.

French officials ended the restrictions after the UK government set up prioritised COVID-19 testing sites for hauliers, who could then return to France if they tested negative. Although the UK has a significant dependence on France-to-UK shipping lanes for its food imports, there are a number of other important routes such as from Rotterdam in the Netherlands, as well as domestic production.

The availability of data regarding UK imports of food and other key inputs in the food supply chain was significant in this situation. The government always had the evidence required to make informed decisions about the next steps. The availability of communicable and up-to-date trade data is crucial in combatting such instances of disruption.

Case Study 3.4 UK-Imposed Border Closures (southern Africa; South America), January 2021

Overview

In January 2021, the UK government imposed border closures due to the presence of COVID-19 variants in several countries. The first border closure was with South Africa in early January. It prevented aircraft travelling directly from South Africa to England, as well as a ban on entry for travellers who had been in or transited through South Africa in the previous 10 days. Equivalent restrictions were imposed on all southern African countries.

In mid-January a second border closure of the same nature was imposed, this time with Brazil and other South American countries.

Background

These border closures mirrored the French border closure in that only unaccompanied freight was permitted into the UK. As this travel ban impacted included over 20 countries, it posed a significant threat to food supply.

Discussion

Although direct flights were prevented from arriving in the UK, the arrival of unaccompanied ships continued. Many of the food items imported from southern Africa and South America such as bananas and grapes travel unaccompanied on ships, so the travel bans did not disrupt their supply.

The risk to food supply was further reduced because food imports from both regions remain relatively low in comparison to Europe. The three biggest suppliers, Brazil, South Africa, and Argentina, only account for 1.7%, 1.6% and 1.5% of the UK's total food imports respectively.

Combining Defra's trade data with an understanding of how food imports are transported, the government was able to impose travel bans without impacting the UK's food supply. It is crucial that the government continues to gather up-to-date data in this area so that difficult decisions can be made efficiently and confidently.

Foreign-imposed border closures do not occur in a vacuum. Vulnerabilities that might normally be of minimal concern can be amplified in the context of a major incident. The French border closure occurred concurrently with two producers of a critical ingredient closing their UK production sites. In this instance, the supply of that ingredient was not severely disrupted but it is vital that the government tracks all such threats to the UK's food supply, through live monitoring of issues as well as engaging with various stakeholders.

The UK imposed border closure was not inconsequential, but the impact on food supply was small, and the impact on food security was virtually non-existent.

Trends

The UK has experienced an increased number of border closures due to the COVID-19 pandemic. Whilst it is difficult to predict future incidents of border closures, the food supply chain has illustrated its resilience in responding to such disruptions.

Indicator 3.1.7 Key inputs to the food supply chain resilience

Headline

Certain goods are critical to the functioning of the food supply chain. Although the supply of these goods is industry led, government monitors the supply of these

key inputs and supports industry in developing plans and mitigations to ensure continuity of supply. Where necessary, government is able to make targeted interventions to maintain supplies.

Context & Rationale

Key inputs are those chemicals, ingredients and additives used in the production, supply, and storage of essential food items. Essential food items are products that are recommended for a nutritionally balanced diet in line with the Eatwell Guide (for example cheese, fresh meat, bread).⁸⁵

Key inputs include all inputs from farm to fork, with products as diverse as fertilisers and chilled meats. In manufacturing, sodium hydroxide (NaOH) is a key input as it is a cleaning agent necessary for the safe and hygienic manufacturing of food. Other examples of key inputs include ammonium nitrate (fertiliser), ethylene glycol (refrigerant), wheat flour (ingredient), tinfoil (packaging), potable water, and fresh fruit and vegetables (ingredient).

Key inputs in the food supply chain are diverse and interface with an array of different markets. The same input could have a myriad of uses within the industry and therefore be vulnerable to several shocks in the system. An example of this is carbon dioxide (CO₂) which is produced, in one instance, as a by-product of ammonium nitrate and used in the meat and drinks manufacturing and packaging industries.

Therefore, contingency planning is essential to ensure that industry and the government are prepared to respond to different shocks to the system. In general, key inputs are resilient to the most common disruptions.

The significance of key inputs to the food supply chain was highlighted during the summer of 2018 when there was a shortage of CO₂. This incident revealed that for the government to have a comprehensive understanding of the food supply chain, it was crucial to map hidden inputs like CO₂. Since then, government has gained foresight into the vulnerabilities in the supply of key inputs. Yet the 2021 shortage of CO₂ has demonstrated that disruptions to key inputs are still a genuine possibility.

The causes of disruption to key inputs are diverse. They include border or transport disruption, company closures, shortages of HGV drivers or shortages of products required to produce the key input.

⁸⁵ PHE, 'Eatwell Guide', <https://www.gov.uk/government/publications/the-eatwell-guide>.

A 'perfect storm' of incidents like this can seriously disrupt the supply of key inputs, so it is important that government maps and monitors them. The initial work undertaken following the CO2 shortages in 2018, coupled with the work done when the UK left the EU, ensured that the government was in a good position to understand the potential vulnerabilities in the supply of key inputs into the food supply chain during the first wave of COVID-19.

Data and Assessment

The government plays an active role in engaging with the agri-food sector to develop industry-led mitigations. This includes providing advice on substitution and seeking alternative supplier routes to mitigate against shortages of key inputs. If disruption did occur, depending on the severity, and where industry mitigations were not possible (e.g., alternative supplier, substitution, reasonable production adjustment), the government would consider appropriate levers on a case-by-case basis and work with the relevant departments to alleviate the impact. This could include regulatory easements, laying legislation to relax food production or labelling regulations, competition law exclusions or prioritising critical products in freight transport into the UK.

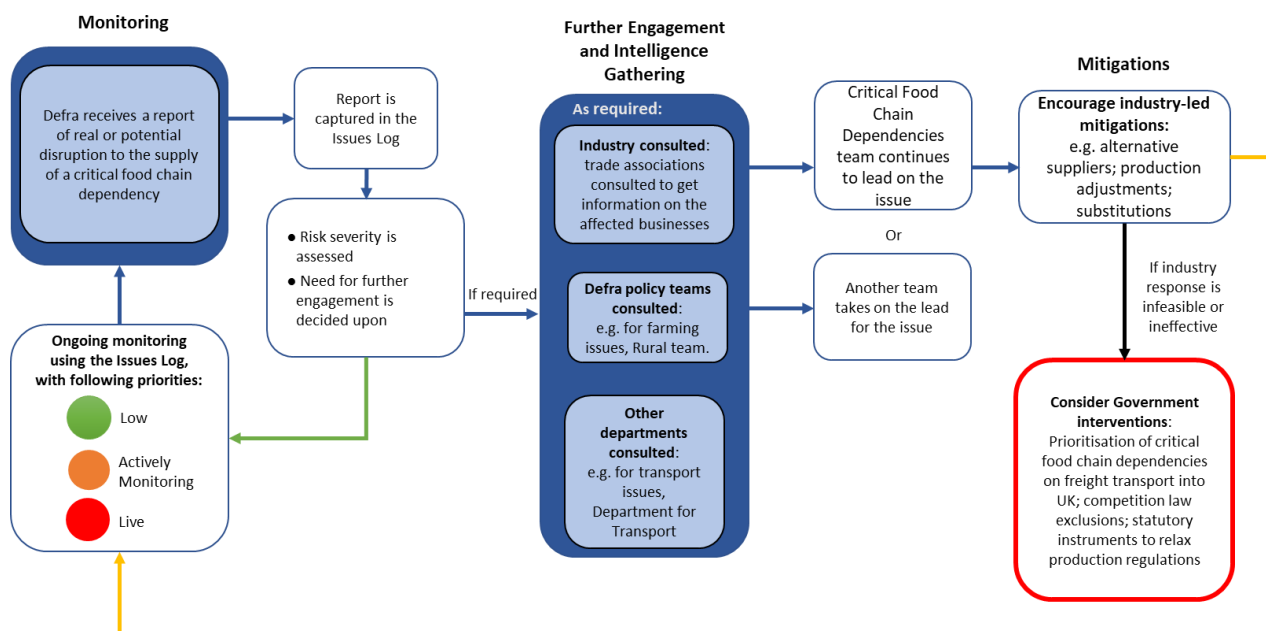
An example of these mitigations is Government Secured Freight Capacity (GSFC), a legacy mitigation that was put in place to reduce disruption in a no-deal scenario to ensure a smooth movement of key input goods (known as Category 1 or CAT1 goods) into the UK through reserved freight capacity.

Within Defra, some industries produce certain CAT1 goods. This includes the food sector which is dependent on key inputs such as raw materials, refrigerants and additives (for example thiamine used in flour fortification). This intervention was used to support the flow of key inputs into the food supply chain. On the date it was stood down in June 2021, GSFC had never been used during the period of live monitoring of disruption to key inputs into the food chain. This is a reflection of the work done by Defra to anticipate a possible disruption in January 2021. Additionally, Defra's role within the Capacity Management Centre (CMC) – the operation centre that ran GSFC – was highly successful in managing and resolving any potential issues without needing further progress into GSFC.

The government, and in particular Defra, conducts research into key inputs into the food supply chain and actively monitors their supply. Intelligence on supply of key inputs is shared across government departments (for example BEIS and the Department for Health and Social Care (DHSC)) and with industry, especially during instances of increased potential for disruption. This collaboration is vital for ensuring government has a clear view of threats to the food supply chain.

Collaboration was particularly important in the context of EU Exit and the COVID-19 pandemic, which had the potential to place stress on the supply of key inputs as a result of consumer-driven demand shocks, border closures, absenteeism, and delays at ports. In addition, regular horizon scanning for signals of change which might impact the supply of key inputs in the medium-term and long-term is undertaken by government.

Figure 3.1.7a: How Defra monitors the supply of key inputs into the food chain



The aim of research into key inputs is two-pronged. Firstly, the research helps government understand the importance of any particular key input to the food supply chain. Secondly, it identifies vulnerabilities in the supply chain of each key input. The research is centred on five broad characteristics:

1. **Supplier** – including major supplying companies; major supplying countries.
2. **Transport** – including lorry type; ship type; accompanied vs. unaccompanied; driver qualifications required.
3. **Supply Chain** – including supply chain type; points of entry.
4. **Production** –including process automation; dependence on migrant labour.
5. **Food Technology** – including importance for essential food items; shelf life; stockpiles; substitutability.

The government also considers cross-sectoral demand for key inputs to aid prioritisation, as well as environmental questions such as the sustainability of their production.

Overall, such work continues to provide insight into food chain key inputs to understand their importance to the food supply chain and the vulnerabilities which might exist in their supply. This has afforded government a clearer, more detailed

understanding of the food supply chain and has strengthened the capacity of Defra to plan for, and ultimately mitigate, potential threats to the UK's food supply. The response to the carbon dioxide shortage illustrated government's role in coordinating an industry response to a short-term supply issue.

The government's work in preparation for leaving the EU and during COVID-19 has helped to increase knowledge of the supply of key inputs into the food supply chain. Within this, government has developed clear mitigations aimed at supporting industry should there be disruption to a key input.

Case Study 3.5 Carbon Dioxide (CO₂) Shortage 2018

Overview

In June 2018 the agri-food sector experienced a shortage of carbon dioxide (CO₂) due to several concurrent factors.

Background

Carbon dioxide is used extensively in the food supply chain, including in supply, storage, as a stunning gas in slaughterhouses, in the packaging of perishable foods, the carbonation of soft and alcoholic beverages, the refrigeration of food, and the refining of sugar.

The factors contributing to the shortage of carbon dioxide included:

- CO₂ is a by-product of ammonium nitrate fertiliser production, so low fertiliser prices across Europe affected the commercial viability of CO₂ production.
- Several UK and EU manufacturers capitalised on the opportunity to shut plants for maintenance works.
- This coincided with high summer temperatures which created problems at some plants, made liquefying CO₂ more difficult, and led to unforeseen failures in restarting plants.
- High temperatures and the 2018 FIFA World Cup also raised demand for carbonated beverages. With low CO₂ stocks, tight supply in continental Europe, and restrictions on sources of supply, many UK suppliers and manufacturers defaulted on contracts to supply CO₂.

The response was led by industry and supported by the UK government.

Discussion:

The Food Chain Emergency Liaison Group (FCELG) was used as a forum for obtaining a detailed view of the UK and European situation, exploring industry use of carbon dioxide and its alternatives, as well as for industry-supplier discussions. Government maintained awareness of emerging concerns and issues for the food and farming sectors, and concerns about their CO₂ stock levels. Through established industry liaison, government understood that industry was assessing the viability of electric stunning and exploring alternatives to CO₂ in packaging.

The pig and poultry sectors were identified as particularly vulnerable to interrupted CO₂ supply due to its use for stunning before slaughter. The Food Standards Agency (FSA) worked to establish practical steps to keep abattoirs running.

Measures were quickly implemented such as the authorisation by the FSA of electric stun facilities and the use of CO₂ alternatives at key sites. Staff working hours at plants were extended where required and a risk assessment was issued to businesses with technical advice on CO₂ and gas substitutes for packaging.

Defra also shared intelligence with key government departments, including BEIS and the Cabinet Office (CO), in order to maintain an overview of the UK's available CO₂ supply.

Although some product lines were impacted by the shortages, the government's close relationship with industry, alongside collaborative intel sharing across government, ensured that no serious food supply issues occurred.

The incident brought to light the vulnerabilities in the supply of CO₂. This encouraged industry to put in place mitigations, such as increased storage capacity, and also motivated government to conduct research into the supply chain of CO₂, and subsequently many other key inputs into the food chain.

Trends

There is a risk of disruption and government will continue to monitor the key inputs into the food supply chain and, where required, work with industry in cases of disruption.

Indicator 3.1.8 Consumer behaviour

Headline

Consumer behaviour can cause sudden demand shocks. During recent disruption caused by the COVID-19 pandemic, industry proved effective in responding to increased demand, with government taking a supporting role. Consumer

behaviour was characterised by a moderate increase in the amount of food purchased and in the number of shop visits made, rather than indiscriminate 'panic buying'. Consumer behaviour was characterised by a moderate increase in the amount of food purchased and in the number of shop visits made, rather than indiscriminate 'panic buying'.

Context and rationale

Consumer purchasing behaviours are the actions taken by consumers to purchase food, drink, and groceries. Consumer purchasing behaviours are complex and widely studied.⁸⁶ Most purchasing decisions are habitual and are reliant on unconscious biases, rules of thumb, and social and cultural norms. A range of factors can shape what consumers choose to buy, and how often, such as:

- shopping priorities such as price or convenience
- personal and household taste/preferences
- advertisement and marketing
- availability
- public messaging
- food concerns such as safety issues
- values such as concern for animal welfare or sustainability

Stockpiling

The decision to stockpile food is an adaptation made by consumers when there is an anticipation that there will be disruption in food supply, a food shortage, or price increases. If this is perceived to be a likely event, then these may be rational behaviours for the individual, especially for consumers concerned with affordability or people with limited access to food shops.

In response to perceived risk to supply consumers can exhibit a range of stockpiling purchasing behaviours. These can range from considered purchasing, whereby consumers add a little more to their baskets, through to bulk buying, where consumers buy significantly more than they would of one item or more in either one or multiple trips, to more extreme behaviours such as looting. These can range from considered purchasing, whereby consumers add a little more to their baskets, through to bulk buying, where consumers buy significantly more than they would usually, to more extreme behaviours such as looting.

⁸⁶ d'Angelo and others, [REDACTED]
[REDACTED]

For the purposes of this report, stockpiling behaviour is defined as when individuals build up a reserve stock of goods over a period of time to mitigate against the loss of not having that product at a later date.

An individual's assessment of whether a risk to food supply is credible is based on the information available to them. This information can take many forms, such as an official government response, media or news content, and also public discourse (such as social media discussion) and the behaviour of others. Depending on the perceived severity of the risk, consumer adaptation strategies sit on a spectrum from normal purchasing behaviour through to stockpiling, then to the more extreme behaviours of panic buying and looting.

Having (access to) more information does not necessarily always lead to a return of normal shopping behaviours. Any additional information, particularly sensationalist coverage on traditional and social media, can risk increasing the visibility of the issue, making it more plausible, thus creating an increased perception of risk and feeding into the overall stockpiling cycle.

Industry is effective in responding to fluctuations in demand including planned (such as Christmas and Easter) and unplanned events (for example, people stockpiling bread and milk during bad weather events). More severe shortages due to sustained consumer demand shocks or 'buying' may require additional interventions by industry, such as item purchasing limits, with government playing a supportive role. More severe shortages, due to sustained consumer demand shocks or 'panic buying', may require additional interventions by industry, such as item purchasing limits, with government playing a supportive role.

Demand spikes can exacerbate shortages of products and increase the pressure on supply chains, making it more challenging to manage stock through supply. Changes in consumer behaviour can cause potential impacts such as product shortages. Even incremental shifts in food purchasing behaviours at the population level can have significant impacts on just-in-time supply chains.

Data and Assessment

Behaviours driving purchasing spikes in a crisis are often reported in the media as irrational responses to perceived supply disruption. However, evidence suggests that the majority of consumer behaviour observed during March and April 2020 was not indiscriminate 'panic buying' to bulk buy goods, but a more moderate increase in purchasing in response to perceived supply uncertainty.

The cumulative effect of these small changes in shopping behaviours can play a significant role in disrupting just-in-time supply chains which are finely tuned to 'normal' consumer purchasing patterns. This disruption led to availability and supply issues which presented as empty shelves or reduced product range in

shops. This was picked up by conventional and social media. Headlines about empty shelves further exacerbated consumer uncertainty and fed into the perception of shortages, which likely led to consumers continuing to purchase more than they normally would. There is a risk of headlines creating a real demand issue from a perceived one.

The strength and speed of this episode was unprecedented. Future (potential) episodes would likely benefit from more effective and earlier coordination with industry, to enable more impactful joined up communications. Response to potential future episodes would benefit from more effective and earlier coordination with industry, to enable more impactful joined up communications. Industry reported that the logistical interventions government made at speed were helpful and would likely need to be enacted again in a similar situation. Increases in purchasing during the COVID-19 pandemic have been the only food related demand shock observed in recent years, although other demand spikes have been observed such as fuel in the autumn of 2020. Future purchasing spikes are likely to be caused by shocks in the food supply chain, but there is the potential for media coverage or rumour to cause demand shocks without any actual supply issue. This is likely to be exacerbated if consumer confidence in the supply chain is low. Both government and industry worked collaboratively in response to consumer behaviour during COVID-19 and are well placed to respond to any future disruptions.

Case Study 3.6 Consumer behaviour in the 2020 lockdown

Overview

The COVID-19 pandemic resulted in a series of sudden changes in consumer purchasing behaviours with two clear phases, effectively separated by the imposition of the hard lockdown on 23 March 2020:

- **Pre-Lockdown:** Starting in late February a fast-rising sense of urgency to secure hygiene supplies swiftly followed by demand for food and other consumables to last a period of potential disruption to supply.
- **Post-Lockdown:** a focus on securing household needs safely, observing and adapting to social distancing measures in a much more closely controlled retail environment.

In both phases a key shopper priority was to establish and maintain a higher level of household resilience than normal. These shopping changes had several significant impacts within the food and consumer goods industry over the spring and early summer of 2020.

Background

COVID-19 tested the UK food supply system perhaps more than any other time in over 70 years. Businesses across the food supply chain had to adjust rapidly to greatly increased consumer demand as the nation came to terms with national lockdown and the closure of businesses, schools, and the hospitality sector. Businesses across the food supply chain had to adjust rapidly to greatly increased consumer demand as the UK came to terms with national lockdown and the closure of businesses, schools, and the hospitality sector. As a result, people were spending more time at home and eating out less.

However, despite a challenging start, the food industry showed its resilience as it continued to function throughout and provide an essential service.

COVID-19 changed lifestyles, as it altered the frequency, volume and the way people bought their food. Understanding how behavioural changes impacted food availability will help government and industry better respond to a future crisis.

Discussion

What was the problem?

Increases in COVID-19 cases and a general expectation that the government would impose some limitations on movements and socialising, and close schools created a degree of uncertainty amongst consumers as to how they may be able to acquire food in the short-term. This uncertainty was compounded by events in other countries which were reporting that consumers were stockpiling food drinks and household goods. To mitigate the perceived risk of being unable to acquire food due to lockdown restrictions, quarantine measures, or the stockpiling behaviours of others, UK consumers rationally increased purchasing.

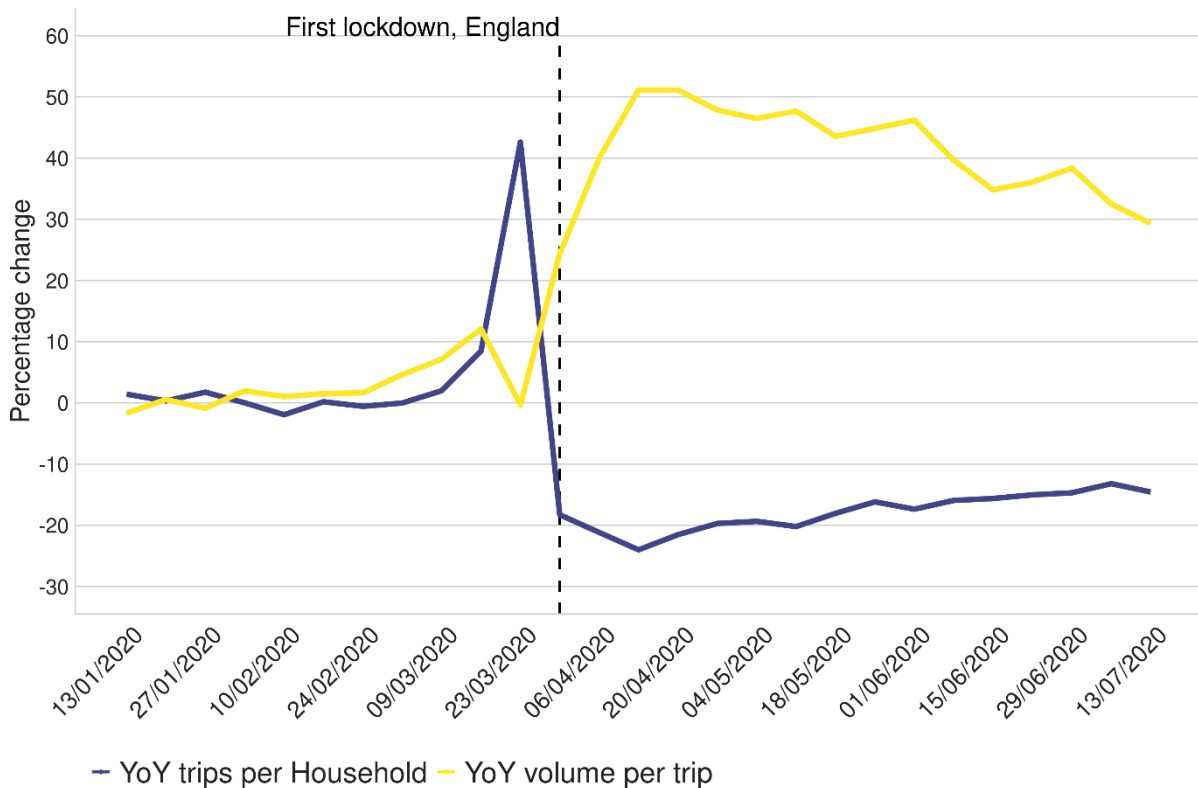
What was the scale of the challenge?

Immediately prior to the implementation of a nationwide lockdown on 23 March 2020 there was a substantive increase in the volume of food purchased compared to the same week in 2019.

This increase was seen in three main ways;

- 1) From mid-February there was a slight increase in the amount of food consumers were purchasing every time they visited the shops
- 2) An increase in the frequency of trips consumers were making to the shops
- 3) A slight increase in the range of products going into consumer baskets, particularly long-life products, and staples. This reflected the fact that consumers were spending more time eating at home.

Figure 3.6a: Consumer purchasing behaviours pre and post lockdown (Kantar, Worldpanel FMCG, England, Wales, and Scotland): percentage change in year on year trips per household and year on year purchased volume per trip. Further information on the methodology can be found in the appendix.



Bulk buyers (for example people buying substantially more than they would normally do in a single trip) were actually in the minority. Data on consumer purchasing patterns did not reflect the media narrative of consumers engaging in indiscriminate ‘panic buying’. To some degree consumers exhibited a rational increase in visits to the shop to acquire the food and drink products they wanted in the face of uncertain circumstances. When this incremental purchasing behaviour was replicated at the population level it created an unprecedented surge in demand over a short period of time which led to product availability issues.

When lockdown began, consumer purchasing behaviours underwent a dramatic transformation (see figure 3.1.8a). The number of shopping trips per week fell while the amount of food purchased per trip increased. This behaviour was likely due to consumers minimising time spent in shops. Retailers just-in-time supply chains struggled initially to replenish the goods on shelves in the face of this sudden shift in consumer purchasing behaviours.

What actions were taken to resolve the issue?

Supply chains were able to adapt to the changes in consumer purchasing patterns swiftly and availability of products largely recovered by June. There were longer term availability issues with some specific items, such as flour and eggs which

were key ingredients in the large increase in home baking which occurred during the lockdown in March to June 2020.

Many of the measures implemented to mitigate impacts of accelerated consumer purchases did not require direct government intervention. Retailers implemented item limits on specific items to stabilise supply and removed a large proportion of promotions including multi-buy offers and quantity discounts.

Retailers suggested that the relaxation of elements of competition law enabled them to coordinate on setting item limits and store opening hours. Additionally, government interventions to allow for additional supplies to be delivered outside of normal delivery hours helped with the push to fill shelves, such as relaxing planning rules for night-time store deliveries and driver hour limits.

Close and frequent communication between retailers, supply chain businesses and government was critical in ensuring these interventions were implemented effectively. The UK governments have multiple forums for engagement with the food retail sector and these were employed throughout the disruption.

It is not clear from evidence which factors and mitigating actions were most significant in ending the demand shock. The pandemic caused a general trend towards fewer, larger shopping trips. Supermarkets were able to readjust to ensure supply was stabilised through government-supported mitigations and setting item limits in place, which may have renewed consumer confidence. It may also be that consumers who had filled their cupboards felt less at risk and returned to their previous purchasing habits.

Trends

Increases in purchasing during the COVID-19 pandemic have been the only food related demand shock in recent years, although demand spikes have been observed such as fuel in the autumn of 2020. Future purchasing spikes are likely to be caused by shocks in the food supply chain, but there is the potential for media coverage or rumour to cause demand shocks without any actual supply issue. This is likely to be exacerbated if consumer confidence in the supply chain is low. Both government and industry worked collaboratively in response to consumer behaviour during COVID-19 and are well placed to respond to any future disruptions.

Indicator 3.1.9 Labour and skills dependency

Headline

The food supply chain is dependent on a large workforce and specific labour skills. There are challenges securing sufficient labour and skill levels across the agri-food chain, which pose a threat to resilience.

Context and rationale

The agri-food workforce employs 4.1 million people, covering 13% of Great Britain's employment⁸⁷ and is critical to the resilience of the UK food sector. The continuity of food supply is dependent upon securing sufficient labour levels and the skills necessary to carry out specialised tasks. This is true for all levels of the food supply chain, from farming production and processing, manufacturing, logistics and retail, right through to transportation of goods. The food supply chain is also reliant upon sufficient labour levels and skills in those sectors upon which it depends, such as energy and transport. Government holds limited quantitative data for labour on a subsector-by-subsector basis. This section includes employment data and supportive qualitative evidence.

The types of roles across the agri-food sector are vast. They include skilled and highly skilled roles – including for example engineers, butchers, supervisors, auditors and veterinary nurses.⁸⁸ The increasing use of digitisation, robotics and automation requires highly qualified staff to maintain and operate such technologies. The specialised skills required for these roles, which often require degrees and postgraduate qualifications, can make recruitment of staff more difficult.

The agri-food sector is also highly reliant upon roles classified as 'low-skilled'. These roles are often labour intensive and common in the agriculture and hospitality sectors.

A key feature of labour within the agri-food chain is the reliance on migrant labour from both EU and non-EU countries. It is estimated that the number of non-UK

⁸⁷ Defra, 'Food statistics in your pocket' (2020), <https://www.gov.uk/government/statistics/food-statistics-pocketbook/food-statistics-in-your-pocket-summary>.

⁸⁸ UKVA, 'Skilled worker visa: eligible occupations and codes' (2021), <https://www.gov.uk/government/publications/skilled-worker-visa-eligible-occupations/skilled-worker-visa-eligible-occupations-and-codes>.

nationals working in the UK is approximately 3.7 million, with approximately 1.5 million non-EU nationals working in the UK.⁸⁹

There are both short-term and longer-term challenges in recruiting across the agri-food sector, which has faced difficulty in securing sufficient labour in recent years. The COVID-19 pandemic caused a shock in the supply chain. The impact of COVID-19 infection rates and requirements for people to self-isolate led to elevated absence rates across the food industry and other interdependent sectors at various points since the start of the pandemic. COVID-19 has also presented logistical challenges for foreign nationals wishing to work in the UK.

At the same time, the introduction of the new points-based immigration system at the end of the transition period has meant it is more difficult for sectors to recruit workers from overseas. Under the points-based immigration system there is no general route for low-skilled workers to enter the UK on a working visa. This has presented challenges in securing labour for parts for the agricultural sector, which in recent history has relied upon EU labour to fill low skilled roles, for example in the meat processing and fruit and vegetable sectors.

A key labour mitigation is the Seasonal Workers Pilot. The Pilot opened in 2019 and is designed to test the effectiveness of the immigration system at supporting UK growers during peak production periods, whilst maintaining robust immigration control. The Pilot also provides a valuable source of labour for the fruit and vegetable growers of the UK, helping to ensure the food security of the country.

The Seasonal Workers Pilot operates in the edible horticulture sector, to support farmers growing UK fruit and vegetables. This is the sector of agriculture which has the highest dependency on seasonal labour and ensures food supply chains in the UK are maintained. Of those granted a Seasonal Worker visa in the year ending September 2021, 18,019 or 73% were Ukrainian nationals. Eastern European nationalities make up most grants in the Seasonal Worker visa, with the next highest grants being to Russian (1,862, 8%), Belarusian (853, 3%) and Moldovan (706, 3%).

Some sectors also have longstanding challenges in securing the appropriate labour levels and acquiring the right skills for their sector. This can include negative perceptions of roles within the agri-food sector. For example, the farming sector roles can be physically demanding and often in rural locations which may limit the labour available. Further, the Food and Drink Federation has estimated over the next ten years, 25% of the food and drink manufacturing workforce is due to retire, with up to a third of the workforce set to reach retirement age by 2033 to

⁸⁹ ONS, 'Labour Force Survey' (2021)
<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/uklabourmarket/august2021>.

2035.⁹⁰ Similar recruitment and retention problems are experienced in roles such as heavy goods vehicle drivers and warehouse operatives in distribution centres. For example, an estimated 268,000 people were employed as HGV drivers between July 2020 and June 2021. This is 39,000 fewer than the year ending June 2019, and 53,000 fewer than the peak of 321,000 HGV drivers during the year ending June 2017.⁹¹ Further, some roles are highly skilled and therefore the number of individuals available to fill specific roles may be limited. This is particularly the case for dairy and meat sectors and areas where specialist engineers and technicians are required.

The impacts of labour and skills shortages will vary between each sub-sector and business type in the food supply chain. Larger companies may have more flexibility to manage higher absence rates due to their ability to move staff around, whereas small and medium-sized enterprises (SMEs) may have limited capacity to develop contingency plans for sudden increases in absence rates. The 'just-in-time' nature of the supply chain may also add additional strain when quickly adapting to smaller workforces.

Defra relies on a collaborative relationship with industry to effectively respond to disruption. In particular, government is dependent on information from industry which allows it to develop an overall assessment of the implications 'on the ground'. This in turn informs the industry response as well as a proportionate and effective cross-government response.

Data and Assessment

Figure 3.1.9a: Agri-food sector employees and self-employed farmers 2020 (millions, percentage).

Indicator: – Employment levels of people in agri-food sector over time

Source: – Agriculture in the UK 2021 (AUK)

⁹⁰ Food and Drink Sector Council, 'Preparing for a changing workforce: a drink and supply chain approach to skills', (2019),

⁹¹ ONS, 'Fall in HGV drivers largest among middle-aged workers' (2021), <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/fallinhgvdriverslargestamongmiddleagedworkers/2021-10-19>.

Figure 3.1.9a: Agri-food sector employees and self-employed farmers 2020 (millions, percentage).

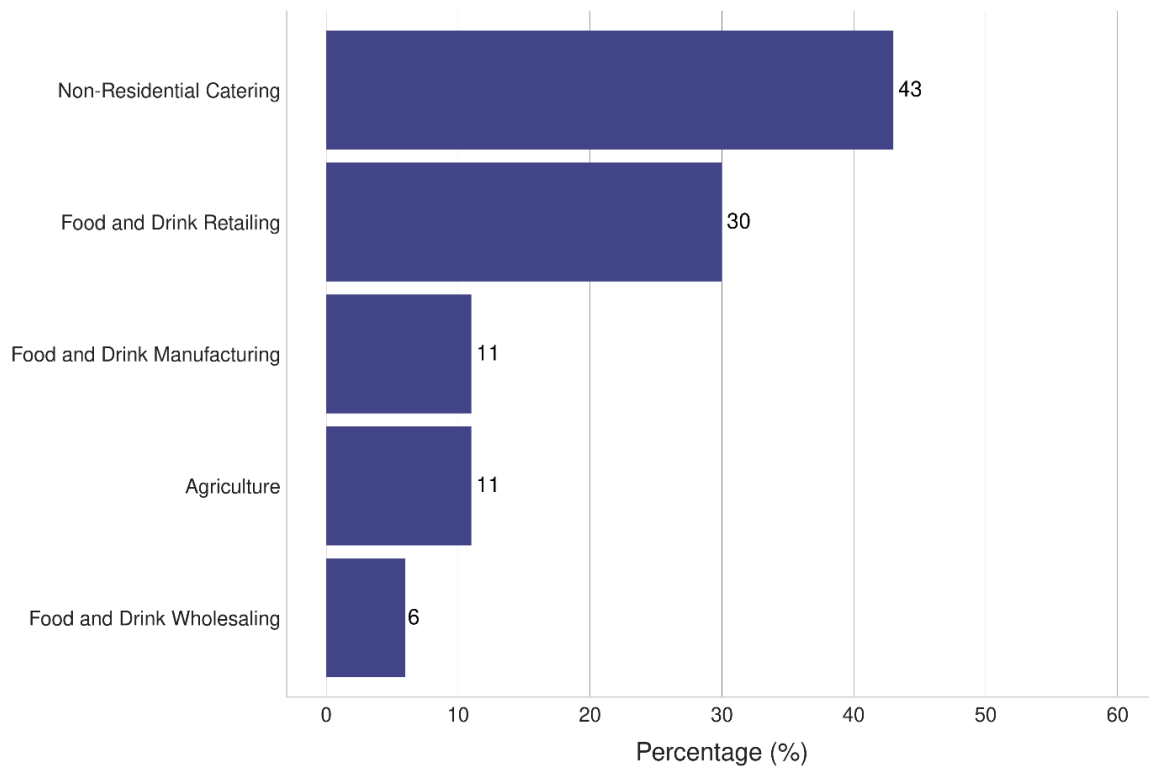
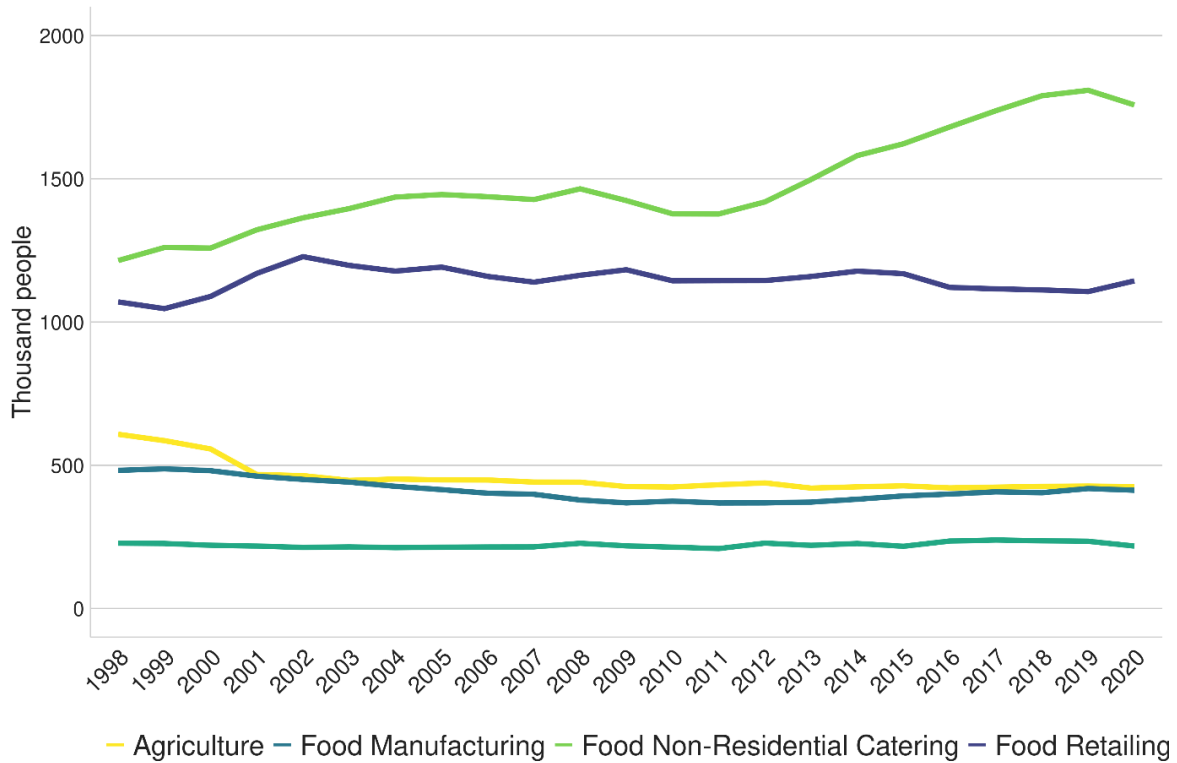


Figure 3.1.9b: Agri-food sector employees and self-employed farmers over time (thousands).



The agri-food sector is one of the most significant employers in the UK. In the fourth quarter of 2020, the agri-food sector employed 4 million people, or 13% of all employees in Great Britain.⁹²

In the twelve months to December 2020, employment in the agri-food sector decreased by 1.0%. Employment in 2020 fell in wholesaling (7.1%), non-residential catering (2.8%), manufacturing (1.4%), and agriculture (0.6%). Employment in 2020 rose only in retailing, by 3.4%. Employment across the whole economy decreased by 1.0% over the same period. The COVID-19 pandemic clearly meant that this was an unusual time, and the partial closure of the hospitality sector (with knock on impacts for wholesale and retail) for periods during this year probably accounts for these figures.

Over a longer period, employment in the agri-food sector has risen 9.7% since 2000. Changes in each of the sectors since that time show that employment in agriculture, manufacturing and wholesaling reduced by 24%, 14% and 1.2% respectively, while non-residential catering and retailing increased by 40% and 5% respectively.

In recent years the agri-food sector has been highly reliant on labour from abroad for specific tasks. For example, Defra estimates that up until the last two years 99% of seasonal workers in the horticultural sector came from outside the UK each season. In the short term, there have been challenges in securing sufficient labour levels and the necessary skills since the start of the COVID-19 pandemic. This is due to high levels of staff absenteeism from COVID-19 infection and the requirement to self-isolate. There remain longer term challenges in recruiting for vacancies in specific sectors in both high and low skilled roles.

The impacts of labour and skills shortages will vary between each sub-sector. However, it is unlikely that there would ever be an overall shortage of food due to a lack of labour levels and skills. In exceptional circumstances in times of reduced capacity this could result in reduced supply availability and choice of some agri-food products, in particular fresh produce. Further, any impacts to one sector could provide knock-on implications to other parts of the food supply chain.

Although the risks associated with labour and skills shortages can add additional strain, the agri-food sector is experienced in responding to disruptions within the food supply chain.

⁹² Defra, '[Agriculture in the UK 2020](#)', p. 17.

Trends

Employment numbers across the agri-food sector have remained stable for over 20 years. The non-residential catering sector saw a gradual increase in years leading up to 2019. The data in this report does not cover 2021 and therefore it cannot account for any further changes in employment rates due to the COVID-19 pandemic.

Indicator 3.2.1 Cyber threat in the food supply chain

Headline

The threat of cyber-attack to UK businesses, including those in the agri-food sector, is significant and growing. A cyber-attack can affect any part of the food supply chain and other sectors which the food sector depends upon.

Context and Rationale

The risk of cyber-attack to UK businesses is significant and continues to grow. It presents a threat to Critical National Infrastructure (CNI) sectors, which includes food and broader areas which the food supply chain depends upon, such as energy, transport, and water. The nature of cyber-attacks means that they are varied and that attackers can adapt their approaches to their targets. It can range from high volume, opportunistic attacks where technical expertise is bought, not learned, to highly sophisticated and persistent threats involving bespoke malware designed to compromise specific targets.⁹³

As with any other industry sectors, agri-food businesses are vulnerable to cyber-attacks. Potential scenarios which could be experienced by UK businesses include:

- Espionage: Infiltrating organisations' corporate and financial systems with the intention of learning and pre-positioning for future attacks.
- Hactivist attacks: Company website defacement, or forcing a website offline through a distributed denial of service (DDOS) attack, which could cause reputational damage.
- Ransomware: Attacks via 'ransomware' where data is made inaccessible to the victim, or systems made inoperable, until a ransom is paid.

⁹³ NCSC, 'The Cyber Threat to UK Business', 2017. <https://www.ncsc.gov.uk/report/cyber-threat-uk-business>

- Phishing: the theft of personal data (staff and/or consumers), corporate data and/or intellectual property or trick staff into making erroneous decisions (for example visiting websites that host malware) and financial transactions (such as sending money to hoax suppliers).
- Other criminality: Attacks on manufacturing plants and industrial control systems.
- Insider Threat: A motivated insider with requisite knowledge of cyber systems could increase the likelihood of a successful cyber-attack. A cyber incident could also result from a lack of employee cyber education or due diligence in following safe procedures.

The specific risks and probable impact associated with cyber-attack varies for different actors within the food supply chain. However, there are specific behaviours which can increase a business's vulnerability to cyber-attack. These include, but are not limited to, weak overall internet or IT security measures, poor password policies, failure to keep software up to date, poor system monitoring, and inadequate access controls. These lack of security measures considerably increase the risk of a cyber-attack taking place.

The overall impact to food supply would depend upon the nature of the cyber-attack and its location within the agri-food chain or other relevant sectors such as energy, transport, or water. The impact could influence the production capability of individual businesses, though it is unlikely to affect the overall food supply chain. For example, any impact to computer systems for logistics businesses could cause some disruption, but its impacts would be limited due to the diversity of logistical companies in the UK.

The National Cyber Security Centre (NCSC) is the UK government's technical authority for cyber security in the UK. It takes a leading role in providing guidance and advice on cyber security for UK organisations. Responsibility for mitigating the risk of cyber-attack rests with industry. Defra and the NCSC work with industry and trade bodies to promote proportionate cyber security measures.

The NCSC produces extensive guidance documents to help mitigate against the risk of cyber-attacks. The NCSC website has a list of 46 different topics related to cyber-security, from ransomware passwords best practice to remote working. All these articles can be found on their [website](#). More broadly, Defra and the FSA jointly sponsor publicly available guidance aimed to build resilience from cyber-attack in agri-food businesses. This guidance is known as PAS 96.

Case Study 3.7 Cyber threat to USA meat company

Overview

In June 2021 the world's largest meat packer, José Batista Sobrinh (JBS), experienced a ransomware attack, with servers affected in North America and Australia. The breach forced the company to pause operations at the majority of its meat plants in the USA, causing concerns about potential meat shortages and animal welfare issues.

Background

JBS has more than 150 plants in 15 countries, employing over 150,000 employees worldwide. Its customers include supermarkets and fast-food chains such as McDonalds.

A ransomware attack is when attackers breach a victim's network and encrypt it. Data is almost always stolen prior to encryption. The attackers then offer to decrypt the victim's network in return for a ransom payment, and threaten to leak the stolen data on the dark web if no payment is made.

Discussion

On 30 May 2021, JBS USA's IT systems were infected by a sophisticated ransomware attack, and the company suspended all affected IT systems as a result. IT systems are essential in modern meat processing plants as they are used extensively throughout the production process. The company believed this ransomware attack, the largest known attack on a food manufacturer, originated from a criminal gang.

This breach forced the company to suspend operations at nearly all its plants in the USA, as the plants were unable to complete even basic tasks, like weighing poultry, sharpening knives, and clocking in employees. The breach also affected the company's operations in Australia, though on a smaller scale.

Although the company did eventually restore its operations back to full capacity on 8 June 2021 (10 days of disruption) through the help of the authorities and third-party experts, they still paid a ransom of £7.8m via Bitcoin to the attackers to decrypt their network and in response to threats to leak the data. Paying the ransom relied on the promises of criminals, and gave no guarantee that the attackers would not leak the data or attack again in future.

Although the attack did not have any noticeable impact on food security in the USA or the UK, this case study has been highlighted to show the potential risks cyber threats can pose food manufactures in the future.

In a sector which is increasingly becoming more dependent on technology, it is difficult to be immune to cyber-attack, but companies can put measures in place to reduce the risk and limit damage once it does occur. The NCSC has produced a number of guidance documents for businesses to plan ahead for future potential attacks. They have listed some recommended standards which companies can voluntarily adopt.

At the time of writing there have been no major cyber-attacks on a UK based food manufacturer. This could reflect the highly resilient nature of the food supply chain as 66% of all businesses have a formalised incident response process. In the event of minor attacks 89% of UK food businesses managed to restore operations within 24 hours.

Assessment

The risk of a cyber-attack is not limited specifically to the food industry, and cyber-attacks on other businesses can cause indirect disruption to individual food businesses. For example, in July 2021 a ransomware attack on the US IT firm Kaseya caused Swedish Coop supermarkets to close (NCSC, 2021). To date there have been no serious incidents in which a cyber-attack on a food business has created widespread disruption to the UK food supply chain.

Defra, the FSA, and the NCSC have been working with major food businesses to promote awareness of sensible and proportionate cyber security measures throughout supply chains including SMEs.

Trends

The threat of cybercrime is growing with attacks becoming increasingly sophisticated. It is essential that industry takes the precautions necessary to help respond to future cyber-attacks and understands the implications should a cyber-attack happen in another sector upon which they rely.

Indicator 3.2.2 Diversity of food retailers

Headline

The size and diversity of the food retail sector provides resilience. If an individual company fails, others can maintain the UK's food supply. No one company has overwhelming market share, although the majority of food retail is concentrated in a small number of supermarket companies. The resilience of the sector was illustrated during the COVID-19 response.

Context and Rationale

Diversity is essential to security, not only in terms of trade in agri-food commodities, but also within the domestic supply chain, which consists of retailers, food manufacturers, wholesalers, and food service operations. High concentrations in specific parts of the food chain may make the chain more vulnerable to temporary supply shortages, which could be exacerbated by increased consumer purchasing. If one major supply chain or company were to fail, for example due to economic failure, cyber-attack, or power failure, there could be a significant impact on availability and access of food, if other chains were not able to help to fill the gap. In the UK, this is an unlikely scenario due to the size and diversity of the agri-food sector, which gives flexibility in case any one sector or company should fail. The greatest risk is in the retail sector, where the five biggest retailers have 60% of market share between them. If one closed, there would be short-term disruption and an additional burden on the supply chains of the other four. This indicator considers the market share of retailers in the UK.

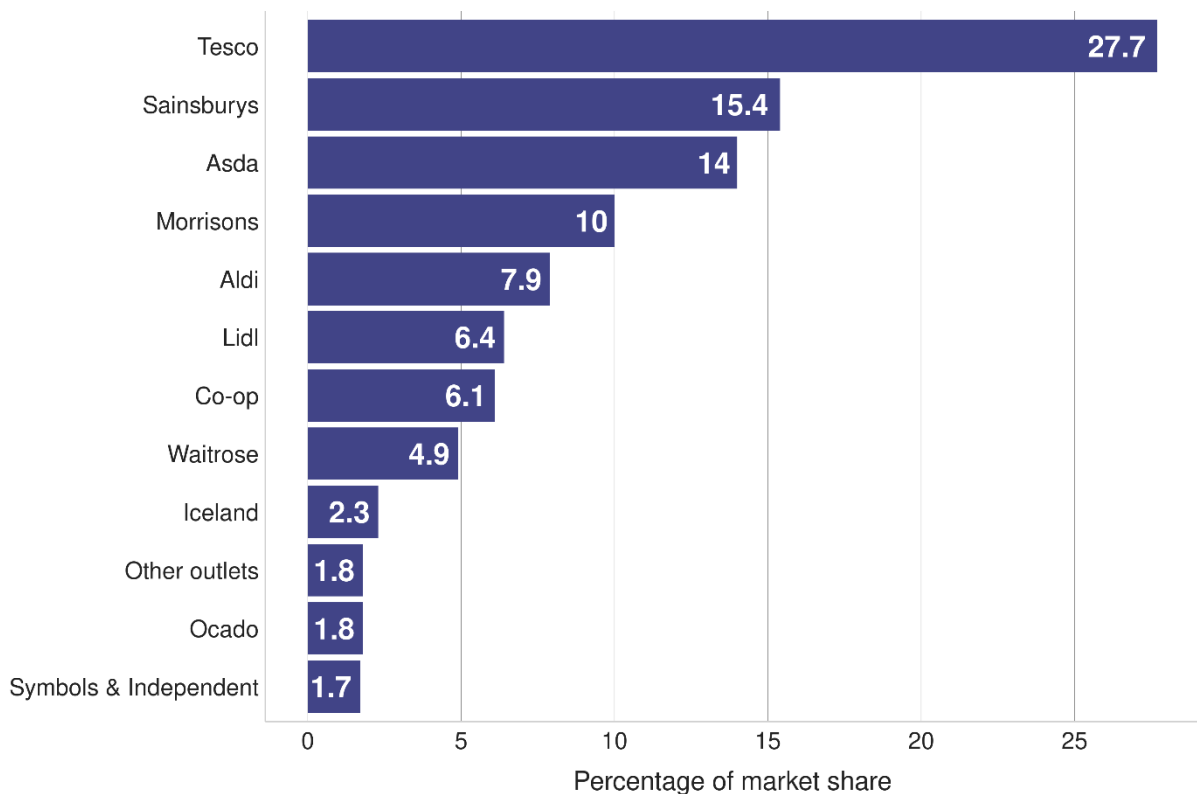
Data and Assessment

Indicator: Diversity within the food industry

Source: Kantar⁹⁴

⁹⁴ Kantar, 'Grocery Market Share'

Figure 3.2.2a: Food and drink retailer market share, Great Britain (12 weeks ending 31 October 2021).



The fact that the UK has several large retail and wholesaling operations suggests a reasonable balance between economies of scale and diversity. Larger companies can enhance resilience in the supply chain through having greater resources and infrastructure to respond flexibly to shocks in the food supply chain. However, small and medium size enterprises, through their adaptability and flexibility, to the diversity of supply and consumer choice.

Trends

The combined market share of food and non-alcoholic drinks of the largest four food and drink retailers accounted for about two thirds of the overall market in 2021. Tesco commanded the largest market share at just over a quarter. The most marked trend in the retail landscape since 2011 has been the rise of the ‘discounters’, notably Aldi and Lidl, whose market share has increased from around 2% each in 2011 to around 8% and 6% respectively. This has generally been at the cost of the biggest four retailers. The COVID-19 pandemic had an immediate and marked effect on internet sales: in the 12 months to March 2020 internet sales of food accounted for around 5% of all retailing on average, in the following 12 months to March 2021 this was 11%. It is not clear that this is a

permanent shift but as of October 2021 this proportion has shown no signs of moving back to pre-pandemic levels.⁹⁵

Indicator 3.2.3 Economic resilience in the food supply chain

Headline

The wholesale sector experienced significant financial pressure due to the closure of the hospitality and public sector food sectors during the COVID-19 pandemic. However, despite these pressures the wholesale sector maintained financial viability and food supply was not compromised.

Context and rationale

The size and diversity of the food supply chain allows flexibility when an agri-food business fails, as identified in **Indicator 3.2.2**. The COVID-19 pandemic placed increased pressures on all parts of the food supply chain. This included some sectors experiencing complete or partial closures, such as those in hospitality and in public sector food. These closures also had knock-on economic impacts for other parts of the food supply chain, including the wholesale sector. The closure of the hospitality sector due to COVID-19 and other lockdown impacts resulted in financial distress across significant parts of the wholesale sector. Due to commercial sensitivity quantitative statistics are unavailable for this indicator. A case study is therefore included which outlines the financial threats faced by the wholesale sector due to partial or full closure of the hospitality and public sector food sectors during the COVID-19 pandemic.

Case study: COVID-19 impacts upon Wholesale Sector

Source: Defra

⁹⁵ ONS, 'Online Retail', <https://www.ons.gov.uk/businessindustryandtrade/retailindustry/bulletins/retailsales/october2021#online-retail>.

Case Study 3.8 COVID-19 impacts upon the Wholesale sector

Overview

Retail wholesalers provide stock to retail customers such as convenience stores. Foodservice wholesalers supply customers, such as caterers, restaurants, hotels, and schools. Retail wholesalers maintained stable demand throughout the pandemic.

Public sector food contracts are fulfilled primarily by foodservice wholesalers. The closure of the hospitality sector due to COVID-19 and other lockdown impacts resulted in financial distress across significant parts of the foodservice wholesale sector.

While wholesalers were eligible for some limited non-sector specific support, they did not benefit to the same extent as the hospitality sector they support.

Despite this financial distress, the food service wholesale sector continued to service public sector food contracts, ensuring people in schools, care homes, nursing homes, prisons, and hospitals continued to be fed throughout the COVID-19 response.

Background

Food and drink wholesalers act as intermediaries throughout the food supply chain, with foodservice wholesalers serving both private hospitality contracts and public sector food contracts. The foodservice wholesale sector operates on low profit margins, and the national lockdown in spring 2020 led to a drop of 40% in food service orders without corresponding reductions in businesses' fixed costs. The foodservice wholesale market is dominated by five firms, which account for around 80% of industry revenues; public sector food is most reliant on larger suppliers, for whom hospitality typically makes up a large proportion of revenue.

Discussion

The cumulative impact of COVID-19 measures resulted in financial distress for foodservice wholesalers who supply public sector food. Impact on provision of food to the public sector posed a food supply challenge for significant and also highly vulnerable parts of the population.

Throughout the pandemic, Defra officials worked closely with the wholesale industry via the Federation of Wholesale Distributors, a dedicated Task and Finish Group, extensive bilateral engagement, and a monthly Defra Wholesale survey. This allowed Defra to assess the scale of the problem and monitor risks to the sector, and in turn to public sector food supply. Defra shared this intelligence and

broader expertise of food supply chain issues with lead government departments responsible for public sector food (DfE, DHSC, MoJ, MoD) This helped to support their contingency planning. Defra also re-established the Public Sector Food Working Group with Cabinet Office. This working group helped to share risks and issues relating to public sector food provision between departments and with devolved administrations.

The Governments of Scotland, Wales and Northern Ireland brought in a number of measures to support wholesalers:

- The Scottish Government launched a £5 million bespoke wholesale Food and Drink Resilience Fund. Providing grants for foodservice wholesalers suffering hardships as a result of COVID-19. The fund was targeted at any SME wholesalers selling food and drink to the hospitality and/or public sector.
- The Welsh Government launched two schemes that could benefit wholesalers supplying hospitality and public sector food: a grant of £5,000 to supply chain businesses whose turnover has been impacted by more than 40% due to the Covid-19 restrictions; and a sector-specific fund for supply chain businesses whose turnover has been impacted by more than 60%, dependent on turnover and employee numbers.

The Northern Ireland Executive offered businesses required to close due to restrictions, including wholesalers, a one-off grant of up to £4,800, depending on business size and length of restrictions.

Assessment

Although there was financial distress across the wholesale sector due to the drop-off in demand from hospitality, the greatest risk of business failure was confined to small and medium-sized foodservice wholesale businesses who are typically engaged with small and medium-sized care homes. Such failures would not affect overall UK food supply to the public sector given the saturation in the sector and the highly competitive market but did pose a risk of short-term shortages for customers. Any failure of these companies would have been managed through re-letting of contracts to competitors.

Theme 4: Food Security at Household Level

This chapter of the UK Food Security Report looks at food security in terms of whether households can consistently afford and access sufficient healthy and nutritious food. It discusses the affordability of food and drink, in real terms and compared to other living costs, and trends in the cost of healthy foods. It looks at physical access to food shops, measures of household food security across the UK, and government schemes to support households to access food. It also looks at the landscape and use of food aid in the UK.

In terms of this theme, food security refers to people in the UK having physical and economic access to sufficient healthy food at all times.

Key messages

- Data on household food security indicates that 92% of households regarded themselves as being food secure in the financial year 2019 to 2020.
- In the last decade, food and non-alcoholic drinks have, on average, become cheaper compared to other goods and services. However, affordability needs to be understood in the wider context of overall household expenditure. Housing and transport make up the largest share of spend for the average UK household, and both categories have seen increases in their share in the last decade.
- Access to food shops in England is for the most part adequate, with at least 84% of the population in every region able to reach a shop by public transport or walking within 15 minutes.

Understanding household food security

There are various complex factors that determine whether a household is food secure. At a high level, household food security can be broken down into affordability, access, utilisation, and stability. Affordability, access, and utilisation provide three key links in the chain, or tests, for households to get food on their plates. Simply, these are whether they can fill shopping bags, pay for them, and prepare nutritious meals. Stability is determined by the consistency with which the previous three tests are met.

Affordability

The relative affordability of food indicates whether a household has the financial means to meet their nutritional requirements. The ability to afford food is linked to

overall pressures on the household budget. Across all households in the UK, food and non-alcoholic drink is the fourth most significant household expenditure after housing, transport, and recreation and culture. Between 2009 and the financial year ending (FYE) March 2020, across all households in the UK, real terms expenditure on food increased by 3.9%, compared to 13.4% for housing and 4.7% for transport. Compared to the EU, UK consumers spend a lower proportion of their household budgets on food and non-alcoholic drink, around 10% against an EU average of 16%. It is important to remember that some of these household expenditures can be considered non-discretionary, meaning that it is difficult for a household to cut back on spending. Changes in these non-discretionary costs could squeeze household food budgets.

Food price pressures do not seem to be adversely impacting household food security. In the last ten years, food prices overall have fallen in real terms, but there are variations between food groups. Vegetables (including potatoes), milk, cheese and eggs have all become cheaper in real terms. Fruit prices have increased faster than inflation, meaning they cost more in real terms than ten years ago. Growth in average weekly household expenditure for housing, transport, and recreation and culture suggests that the pressure these categories are exerting on the household budget are, on average, more significant than food.

Not all households are equal in this regard. The poorest 20% of households, for whom income has decreased since 2017, spend a higher proportion of their income on food and are thus more impacted by changes in food prices. The proportion of household income spent on food by UK households in each income bracket has remained broadly consistent in the last decade.

Access

Physical access to buy healthy, nutritious food is necessary for food security. Households must have ease of physical access to food shops or affordable food delivery to meet their nutritional requirements.

Data on travel time is currently only available for England. In the regions of England with the lowest access to food shops, over 95% of the population can reach a food shop within 30 minutes without needing a car, and over 84% within 15 minutes. Access to food shops is not equal across regions, with fewer people able to access a food shop quickly without a car in more rural regions. It is also important to note that currently it is not possible to assess the cost and selection of food that is available to consumers in their nearest food shop. Advances in the availability of online grocery shopping across the UK have the potential to alleviate some of the difficulties regarding physical access to food shops. It is likely that the switch to more online grocery shopping might become permanent amongst certain consumers, with the potential for more businesses to offer these services. Trends over time and the impacts of the COVID-19 pandemic are not currently available but will be tracked in future UK Food Security Reports.

Utilisation

Even if affordability and access needs are met, the ability and opportunity to prepare food within households is also important to food security. There are many factors that can prevent people from doing so, including disabilities, lack of infrastructure to store and prepare food, the energy costs of cooking, and lack of skills or time to cook. Measuring the prevalence of these factors is currently very challenging, and there is a lack of sufficient evidence to produce a representative picture across the UK.

According to the most recent data for all UK households in the Family Resources Survey for FYE 2020, 92% of households in the UK reported they were food secure. However, 8% reported being food insecure, and of this, 4% reported low food security and another 4% very low food security. Food insecurity is not evenly spread across society, with age, disability, ethnicity, and geographical location all factors affecting household food security. Trends in this data, including the impacts of the COVID-19 pandemic, will be monitored in future UK Food Security Reports. This report focuses mainly on measuring affordability and access as these factors have the most consistent indicators.

The wider context of household food security

Household food security is not evenly spread across society. For those households in the UK less able to afford food, support schemes exist which provide food aid or otherwise help with food security.

Two of the main government support schemes for households on low incomes are free school meals and the Healthy Start (in England, Wales, and Northern Ireland) and Best Start Foods (in Scotland) schemes. Eligibility for, and uptake of, these schemes provides useful indicators for the wider household food security picture.

Healthy Start vouchers are a scheme in England, Wales, and Northern Ireland to support people on low incomes to access pre-natal vitamins, infant milk formula, and healthy food for young children. In Scotland an equivalent Best Start Foods scheme launched in August 2019. The take-up rate of the Healthy Start voucher scheme was relatively stable between 2019 and 2021. The number of people who can apply for the scheme, known as the eligibility rates, have increased in England, Wales, and Northern Ireland when data from early 2019 is compared with August 2021. These increases are likely linked to COVID-19 and its impacts on the financial situation of households.

Eligibility rates for free school meals have been stable across the UK in recent years, with Wales and England seeing an increase from 2018 due to the introduction of Universal Credit and its transitional protection. Data for England and Wales, however, shows that more pupils became eligible for free school meals between January 2020 and January 2021. This is likely due to COVID-19 impacting households' financial situation as well as the continuing Universal Credit transitional protection measures, which have extended eligibility to more pupils.

Eligibility rates are also expected to increase in Scotland in the coming years due to the staggered expansion of universal free school meals for Primary 4 pupils in August 2021, Primary 5 pupils in January 2022, and all primary school children in August 2022.

Where households struggle to afford food, direct food aid is provided by many different types of organisations, including registered charities, places of worship, community organisations, schools, hospitals, and commercial and social enterprises. These are commonly referred to collectively as 'food banks'. Due to the great diversity of food aid provision, there is no comprehensive record of the number of organisations providing food aid in the UK. Government data is limited regarding the number of individuals or households receiving food aid, how much they might have received and over what period.

Outside the home, public food procurement impacts almost 24% of the population in England and is an important lever to promote a healthy, sustainable food system. The government sets both buying and nutrition standards for food procurement by public bodies.

Indicator 4.1.1 Food expenditure growth compared to other household spending growth

Headline

Across all households in the UK, food and non-alcoholic drink is the fourth most significant household expenditure after housing, transport, and recreation and culture. Between 2009 and 2020, across all households in the UK, real terms expenditure on food increased by 3.9%, compared to 13.4% for housing and 4.7% for transport.

Context and Rationale

Households' ability to afford food is linked to overall pressures on the household budget. This indicator puts food expenditure in the wider context of other household spending to illustrate how growth in other household spending categories may impact the budget available to spend on food.

Other essential expenditures from the household budget include housing, fuel and power, household goods and services, and transport. Some of these expenditures such as electricity and gas bills are considered non-discretionary, meaning that it is

difficult for a household to cut back on spending. Price increases in these categories, therefore, can reduce the available food budget. For food, consumers may be able to adjust the money they spend by buying less of a certain product, by switching to cheaper products within a food grouping, or by reducing the consumption of luxury food items or treats. For some households, it could also mean that people might rely on food aid or miss meals if they cannot afford to buy enough food.

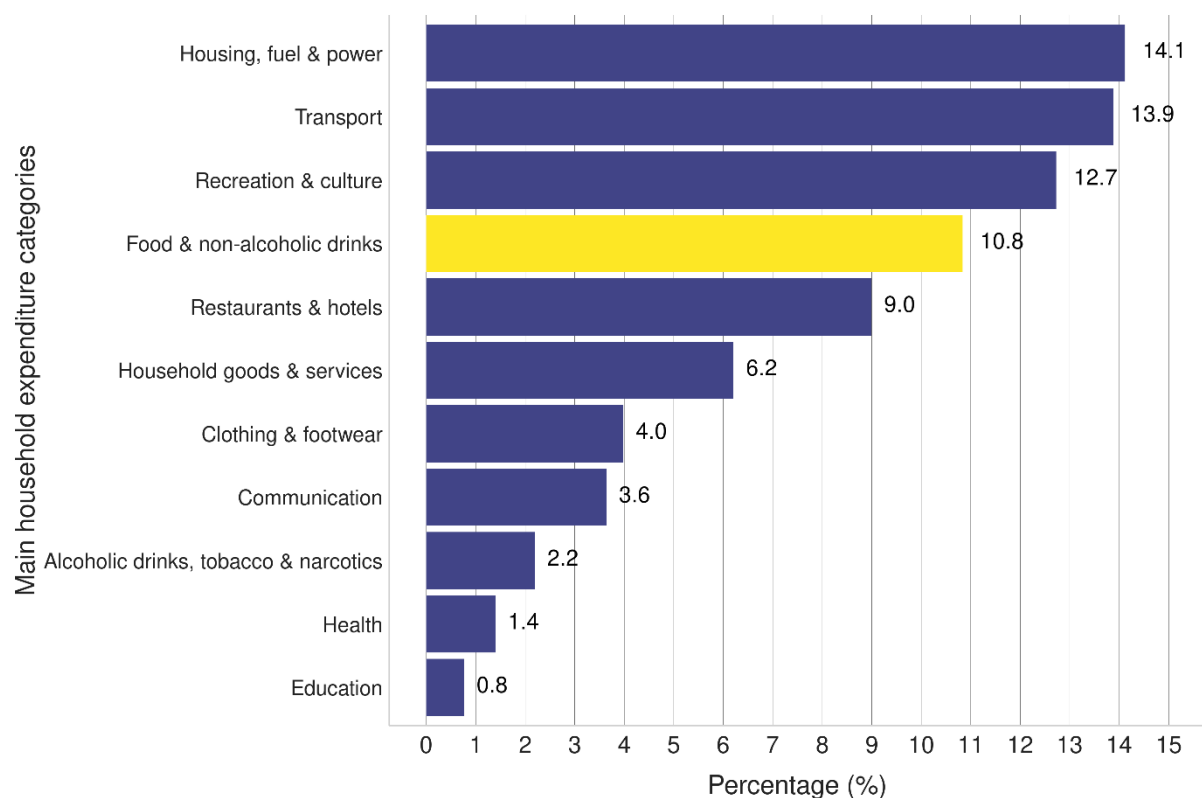
The data used in this indicator represents the average household in the UK. It is important to note that within a household there may be differences at the individual level that are not captured in this data.

Data and Assessment

Data: Contributions to household expenditure growth by Classification of Individual Consumption According to Purpose (COICOP) category over time

Source: ONS Family Spending in the UK

Figure 4.1.1a: Average share of spend in all households FYE 2020

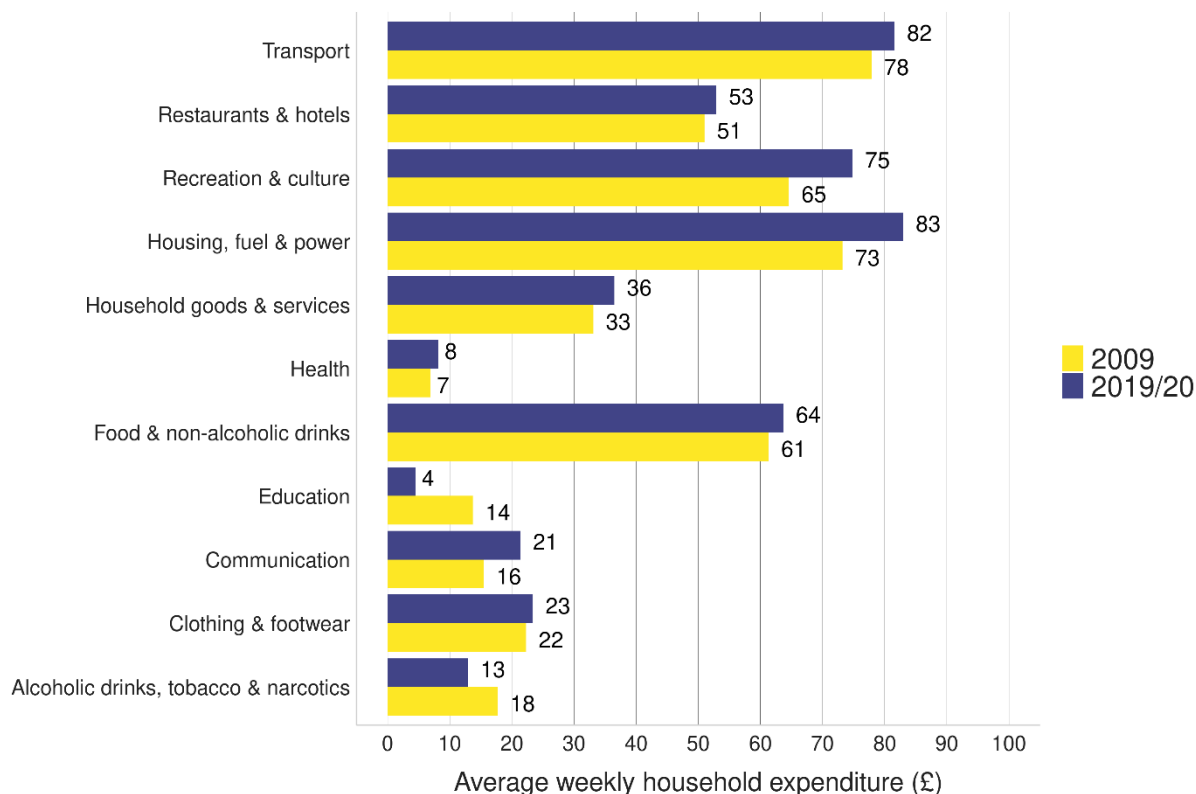


In FYE 2020, the average weekly household expenditure in the UK was £588, down slightly, but not significantly, from FYE 2019 when it was £603 (adjusted for inflation).

In FYE 2020, housing, which does not include mortgage interest or council tax, was the largest expenditure in the average UK household at 14.1%, followed by transport

at 13.9%, recreation and culture at 12.7%, and food and non-alcoholic drinks at 10.8%.

Figure 4.1.1b: Actual average weekly household expenditure in 2009 and FYE 2020 (real terms)



Between 2009 and FYE 2020, the increase in total weekly expenditure was 4.8%, from £561 to £588. In the 10-year period covered by the data, housing increased by 13.4% (from £73 per week per household to £83) and transport by 4.7% (from £78 to £82). Recreation and culture expenditure increased by 15.8% (from £65 to £75) and food expenditure increased by 3.9% (from £61 to £64). Apparent increases in communication expenditure were partly due to changes in the Office for National Statistics (ONS) questionnaire. Households reported a decrease in weekly expenditure on education and alcoholic drinks between 2009 and FYE 2020, although education was only 0.8% and alcoholic drinks 2.2% of total expenditure in FYE 2020.

Trends

The growth in average weekly household expenditure for housing, transport, and recreation and culture suggests that the pressure these categories are exerting on the household budget is, on average, more significant than food. Housing and transport are largely non-discretionary expenditures, meaning that households have less control over reducing these expenses. With food being a non-discretionary expense, some households may choose to ‘trade down’ by switching to cheaper products of the same type or buying less of certain types of food to save money.

Based on data from FYE 2020, the ONS calculated that in those 12 months UK households spent an average of £187 per week on activities that were largely prevented during the lockdown of 2020 due to COVID-19 restrictions. These activities included going on holiday, dining out, and travelling. These potential savings, however, were not equally accessible to all households. Younger households, those who are renting, and those living in London spend proportionally more on essentials and relatively little on goods and services that were unavailable under lockdown compared to average households. This could have limited their ability to cut back on spending if their income decreased. Some companies, including mortgage providers and gas, electricity, and water suppliers, offered payment holidays on regular bills. The ONS estimates that 40% of household spending on essentials could have been subject to a payment holiday, equivalent to £177 per week. Any payment holidays, however, were temporary and money saved would need to be paid back.⁹⁶

Food prices can be impacted by a range of factors, including international food commodity and oil prices, exchange rates, transportation, domestic agricultural prices, and labour costs. Significant increases in these areas create upward pressures on UK consumer food prices.

Food retailers generally compete on price and may absorb temporary cost rises. This means that very significant increases to consumer food prices in the UK are not expected unless sustained and significant upwards pressure is created by one or, more likely, multiple major price drivers. If that happens, households on lower incomes within the UK are more affected by food price increases as they tend to spend a larger proportion of their household expenditure on food products. This is discussed in more detail in **Indicator 4.1.2**.

Indicator 4.1.2 Low-income households' share of spending on food

Headline

The poorest 20% of households spend a higher proportion of their income on food and are thus more exposed to changes in food prices. Incomes for the bottom 20% of households have decreased since 2016 to 2017. The proportion of household income spent on food has remained broadly consistent in the last decade for all UK

⁹⁶ ONS, 'More than one-fifth of usual household spending has been largely prevented during lockdown' (2020),

<https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/expenditure/articles/morethanonefifthofusualhouseholdspendinghasbeenlargelypreventedduringlockdown/2020-06-11>.

households, including the bottom 20%. Between 2014 and 2020, food prices in real terms were on a downward trend, meaning that food has become cheaper compared to previous years.

Context and Rationale

The purpose of this indicator is to measure the burden that spend on food places on the household budget for low-income households. The data in this indicator looks at the share of the household budget spent on food purchased to consume at home.

Food tends to account for a greater percentage of household spend for low-income households compared to higher income households. Comparing against all households shows the greater effects food price rises may have on low-income households. Low income is one of many factors that can make someone vulnerable to food insecurity. In the context of this report, low-income households are identified as those within the lowest 20% of households by equivalised disposable income, a measure of household income that accounts for differences in household size and composition.

According to the Office for National Statistics (ONS), between 1957 and 2017 the share of household expenditure spent on food halved. This partly reflects larger incomes, smaller households, and a greater choice of products at different price points.⁹⁷ UK households devote a lower share of their spending to food and non-alcoholic drinks compared to households elsewhere in Europe, and particularly in developing countries. For instance, for the average UK household, 10.8% of spend went on food and non-alcoholic drinks in FYE 2020,⁹⁸ whereas in EU households, 13.0% of consumption expenditure went towards food and non-alcoholic drinks on average in 2019.⁹⁹

Data and Assessment

Indicator: Spending on food purchased for home consumption as a percentage of total spending, by all households and low-income households

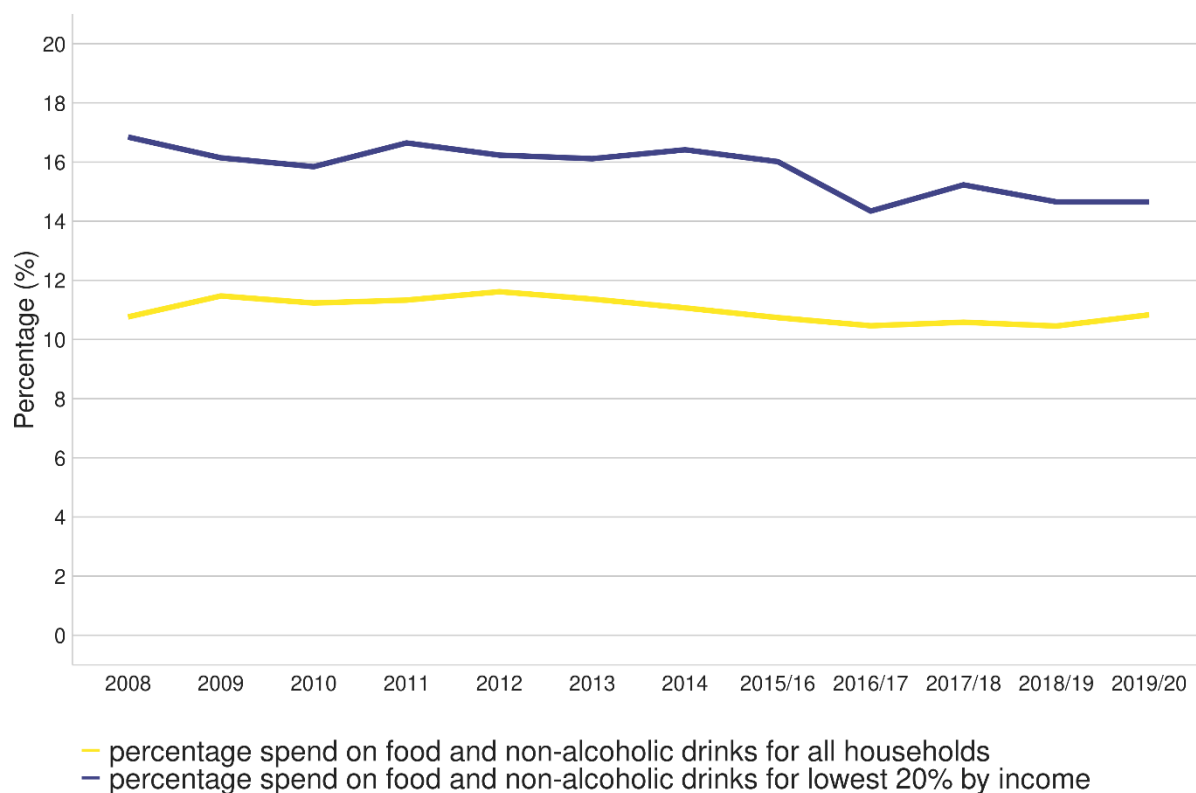
Source: ONS Family Spending, 2019 to 2020 and ONS Consumer Price Inflation

⁹⁷ AHDB, 'Why UK consumers spend 8% of their money on food' (2020),

⁹⁸ ONS, 'Family Spending in the UK 2019 to 2020', <https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/expenditure/bulletins/familyspendingintheuk/april2019tomarch2020>.

⁹⁹ Eurostat, 'Household expenditure in 2019',

Figure 4.1.2a: Average spend on food and non-alcoholic drinks, percentage of total spending by low-income and all households, 2008 to FYE 2020



The data compares the percentage of the average weekly household expenditure that is being spent on food and non-alcoholic drinks, for all households and for households in the lowest quintile (bottom 20%) by equivalised disposable income. This is expenditure, not income, so does not account for money that households have put away in savings.

In the period since 2008, households in the lowest quintile by income (bottom 20%) have spent between 14% and 17% of their household expenditure on food and non-alcoholic drinks, while the average household has spent between 10% and 12%. Since 2008, there has been a gradual decrease in food expenditure, as a percentage, for both the lowest 20% by income and for all households.

Figure 4.1.2b: Changes in the food price index (real terms prices) 2010 to October 2021



Figure 4.1.2b is included in this indicator to support the overall assessment of the trends in household spend on food. Real terms prices are adjusted for the effects of overall inflation, which makes it possible to measure the actual change in food and non-alcoholic drinks prices and not just an increase because of overall inflation. From a peak in February 2014, food prices fell continually until October 2016. Prices fluctuated between 2016 and 2019, before falling steadily from May 2020 onwards.¹⁰⁰

¹⁰⁰ ONS, 'Consumer price inflation, UK: October 2021', <https://www.ons.gov.uk/economy/inflationandpriceindices/bulletins/consumerpriceinflation/october2021>.

Figure 4.1.2c: Year on year percentage change in income, before housing costs, by quintile median and overall population median (pounds per week equivalised in 2019/20 prices)

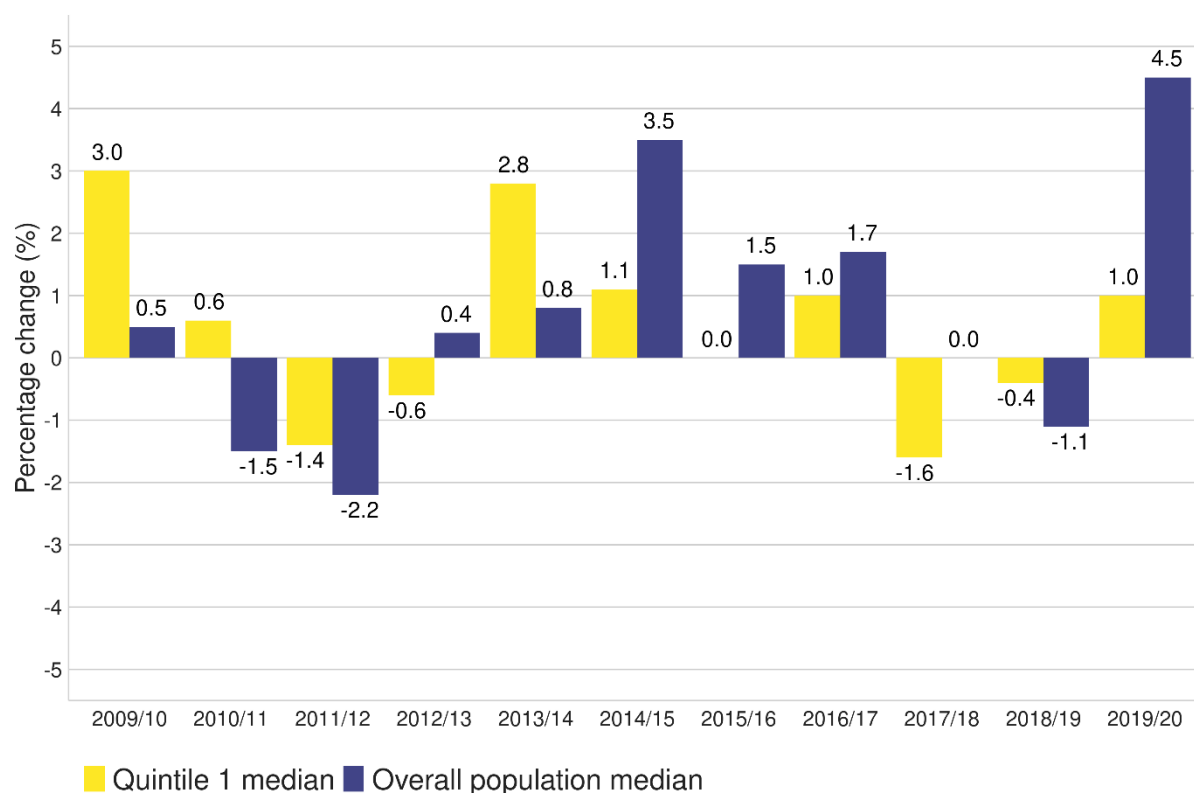


Figure 4.1.2c shows income before housing costs by quintile and overall population medians (equivalised in real terms). This is not the average, but the medians of the income quintiles. These figures have been deflated to FYE 2020 prices and take account of household composition. The sample size is about 20,000. Another data source on income is from ONS' Average Household Income publication, on the median equivalised disposable household income of individuals by income quintile, published as pounds per year. It has a sample of about 17,000 households, but 5,000 households before 2019. The data is from the Living Costs and Food Survey (and Survey on Living Costs from 2019), which is also the data source used in the expenditure data in Figure 4.1.2a.

In FYE 2020 the median income before housing costs in the UK was £547 per week. From FYE 2017 to FYE 2020 income in the bottom quintile fell by 1.1%, to £264 per week, while for the top quintile income grew by 3.9%, to £1,070 per week. In the 10 years from FYE 2010 to FYE 2020, the median income before housing costs for the overall population rose by 7.7%, while the bottom quintile has seen income rise by 2.4% and the top quintile has seen a 2.3% rise in income. Since 2000 median incomes for all households have risen by 25%.

Data from ONS's Average Household Income analysis also show that in the last 3 years the income of households on low incomes has decreased while the income of

households on high income has increased. This dataset shows the median equivalised disposable household income of individuals by income quintile.

Between FYE 2017 and FYE 2020, the median disposable income of households in the bottom quintile fell by 11.1% while for all individuals it grew by 0.3%. In the 10 years from FYE 2010 to FYE 2020 median disposable household income in the bottom quintile fell by 2.7%, and in the top quintile it grew by 2.9%. The average disposable income for all individuals in the UK over the same 10-year period has grown 6.9%.

The GSS income and earnings coherence work plan was published on 14 October 2021.¹⁰¹ It has been produced collaboratively by three government departments: ONS, Department for Work and Pensions (DWP) and HM Revenue and Customs (HMRC). This work plan recognises the recommendation from the Office for Statistics Regulation to improve the accessibility of language and guidance, and is working to ensure that government publications provide a coherent description of the income and earnings landscape with an action to explore the feasibility of producing a single set of cross-sectional household income estimates.¹⁰²

There is a published, and soon to be updated, guide to sources of data on income and earnings which outlines the different data sources and outputs that feed into the analysis of income and earnings within the UK.¹⁰³ It explains important information for each data source, including what data are available and the sources' main uses, strengths and limitations. This guidance sets out that the Living Costs and Food Survey is the primary source of household expenditure data and can be used to carry out joint analysis of income and expenditure; and the Family Resources Survey and Households Below Average Income series is the foremost source of data and information about household income, income poverty and inequality and is used for the analysis of low income by researchers and the government.¹⁰⁴

For this report on Food Security, the Living Costs and Food Survey has been used for analysis looking at expenditure on food and the direct relationship between this expenditure and household incomes; with the Households Below Average Income series used when reporting on trends in household income and analysis of low incomes.

¹⁰¹ Government Statistical Service, 'Income and earnings statistics', <https://gss.civilservice.gov.uk/user-facing-pages/income-and-earnings-statistics/>.

¹⁰² Office for Statistics Regulation, 'Review of Income-based poverty statistics', <https://osr.statisticsauthority.gov.uk/publication/review-of-income-based-poverty-statistics/>.

¹⁰³ ONS, 'A guide to sources of data on income and earnings', <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/methodologies/aguidetosourcesofdataonearningsandincome>.

¹⁰⁴ DWP, 'Family Resources Survey', <https://www.gov.uk/government/statistics/family-resources-survey-financial-year-2019-to-2020/family-resources-survey-financial-year-2019-to-2020>; Households Below Average Income: financial year 2020', <https://www.gov.uk/government/statistics/households-below-average-income-for-financial-years-ending-1995-to-2020>.

Trends

Household spend on food as part of their total budget has remained fairly constant since 2010 for average households and low-income households. Between 2010 and 2020, real terms food prices decreased, so that to buy the same food in 2020 cost less than in 2010. Since 2010 median income in real terms for low-income households (bottom quintile) has increased by 2.4% meaning that low-income households have more money to spend.

Low-income households saw their income fall by 1.1% between FYE 2017 and FYE 2020 in contrast to the average household whose income has increased by 4.9% since FYE 2017. With a decrease in income alongside the percentage spent on food having remained the same, the poorest households could have had a diminished budget available for food since FYE 2017.

Indicator 4.1.3 Price changes of main food groups

Headline

Since 2011, food prices overall have fallen in real terms. This has varied by food groups. Vegetables (including potatoes), milk, cheese and eggs, and meat have all become cheaper in real terms. Fruit prices have increased faster than overall inflation, meaning they have become more expensive in real terms than ten years ago.

Context and Rationale

The aim of this indicator is to monitor trends in the affordability of a healthy diet to provide a measure of consumers' nutritional food security. The Consumer Prices Index including Owner Occupiers' Housing costs (CPIH) food groups that are analysed in this indicator serve as a proxy for some of the main foods recommended by government for a healthy diet and look at vegetables including potatoes, fruit, milk, cheese, and eggs, fish, meat, and bread and cereals.

Food price increases can affect consumers' purchasing behaviour. Price rises may mean that consumers either 'trade down' by switching to cheaper products of the same type, buy less of a type of food, or spend more money for the same product. The evidence of the extent to which food price rises affect dietary habits is limited. Nevertheless, tracking the real term prices of key food groups for a healthy diet is still a useful tool to understand some of the factors affecting consumers' ability to follow a healthy diet.

Providing guidance on a healthy diet is complex and will often need to account for an individual's circumstances. The Eatwell Guide depicts a diet based on five food groups and shows the proportions of foods from each food group that are needed to obtain the wide range of nutrients required to stay healthy.¹⁰⁵ For this report, several foods from some of the larger segments of the Eatwell Guide have been selected to track their affordability. It should be noted that there are differences between the composition of the five food groups the Eatwell Guide uses, and the CPIH food groups used in this report due to different categorisation.

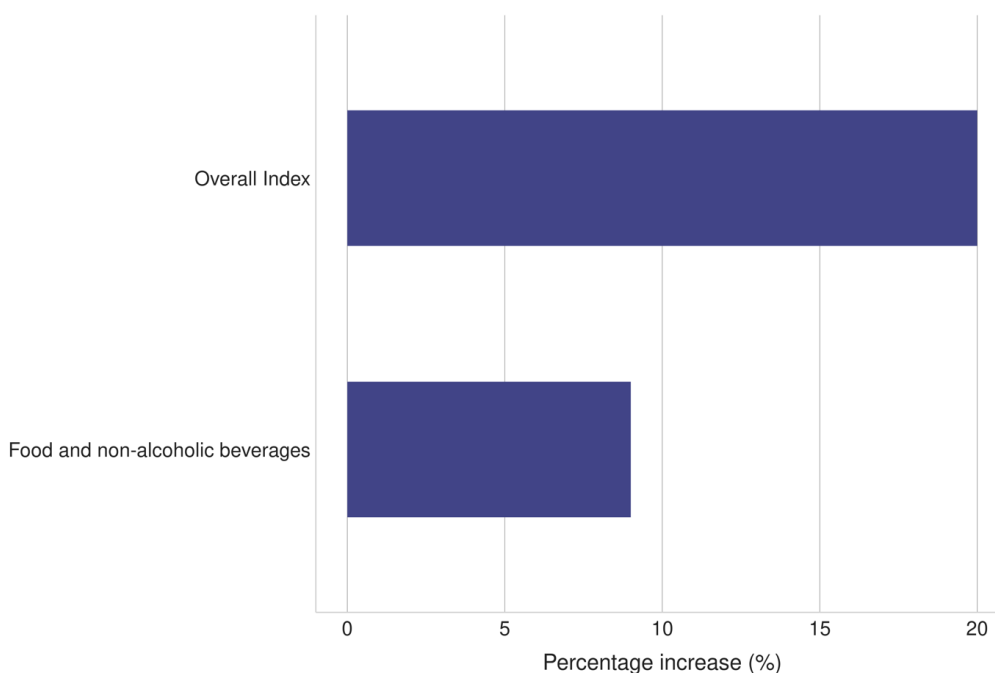
The Consumer Price Index (CPI) is a measure of consumer price inflation produced to international standards and in line with European regulations. The CPI is the inflation measure used in the government's target for inflation. The CPIH is the most comprehensive measure of inflation. It extends the CPI to include a measure of the costs associated with owning, maintaining, and living in one's own home, known as Owner Occupiers' Housing Costs (OOH), along with Council Tax. Both are significant expenses for many households and are not included in the CPI.

Data and Assessment

Indicator: Index of real terms food prices for vegetables, fruit, fish, meat, bread and cereals, and milk, cheese, and eggs.

Data: Office for National Statistics, CPIH

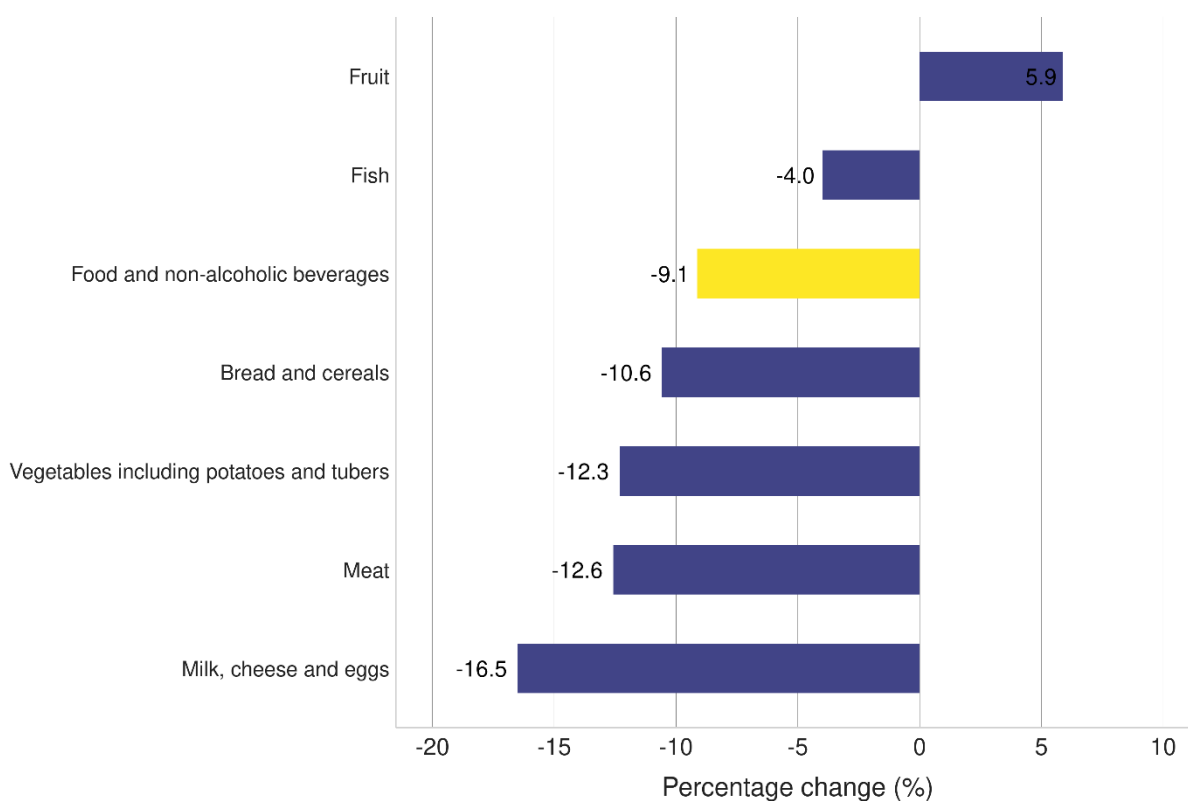
Figure 4.1.3a: Percentage change in prices between October 2011 and October 2021, overall CPIH and food and non-alcoholic beverages



¹⁰⁵ PHE, 'Eatwell Guide', <https://www.gov.uk/government/publications/the-eatwell-guide>.

The overall CPIH rose 20% between October 2011 and October 2021. Food and non-alcoholic beverages rose 9% in the same period.

Figure 4.1.3b: Percentage change in real terms prices between October 2011 and October 2021, food product classes



Food and non-alcoholic drink prices have decreased in real terms between October 2011 and October 2021. Within food categories, most prices have decreased in real terms in this period. Milk, cheese, and eggs have decreased the most at 16.5%, followed by meat at 12.6% and vegetables (including potatoes and tubers) at 12.3%. CPIH for fruit (fresh and preserved) is the only food category that has increased in the 10-year period, by 5.9%.

Trends

Prices for all main food categories except fruit have fallen in real terms in the last 10 years, as food prices have grown more slowly than the overall CPIH. The increase in fruit prices is above that for food and non-alcoholic drinks. There could be consequences for health, as government recommends that individuals consume at least five portions of fruit and vegetables a day, making up a third of what an individual should eat. While fruit juice can also be a substitute for raw fruit, usually at a lower price, consumption should be limited to no more than 150ml a day.

Food prices are determined by various factors. For fruit in particular, poor harvests, a fall in Sterling exchange rates, or transport disruptions leading to fresh fruit being spoilt, can have an impact on consumer prices. The UK imports most of its fruit from the EU, South America, and Africa. Any issues arising in these regions as well as further down the supply chain may affect fruit prices in future. It is not clear whether the increase in fruit prices since 2011 has been driven by increased consumer preferences for imported out-of-season fruit.

Indicator 4.1.4 Household food security

Headline

According to government data from FYE 2020, 92% of households in the UK regarded themselves as food secure. 8% regarded themselves as food insecure; of this, 4% reported low food security and another 4% had very low food security. Food insecurity is not evenly spread across society, with age, disability, ethnicity, and geographical location all factors affecting household food security.

Context and Rationale

In March 2021, food security data for all UK households was published in the 'Family Resources Survey: financial year 2019 to 2020' for the first time, covering the period of April 2019 to March 2020. This surveys whether heads of households have sufficient food to facilitate an active and healthy lifestyle.

The person with the most responsibility for buying and preparing food in the household (head of household) is asked to assess their overall household food security within the last 30 days by answering a series of questions. The limitations of this indicator mean that information about individual experiences of food insecurity within the household is not available, nor can it directly measure hunger. Instead, the indicator illustrates the financial situation of households and how that affects their access to food. The broad structure and sequence of the questions is the same as those used internationally, including by the United States Department of Agriculture, enabling international comparisons. Although the Food Standard Agency's (FSA) Food and You 2 survey uses the same ten questions as the Family Resources Survey, it is worth noting that the results between the surveys may differ due to the FSA asking these questions about a longer period of 12 months.¹⁰⁶

¹⁰⁶ FSA, 'Food and You 2', <https://www.food.gov.uk/research/food-and-you-2>.

The 30-day reference period used in the Family Resources Survey may have some limitations in that it can provide only a snapshot of food insecurity at a given time.¹⁰⁷ Nevertheless, this indicator primarily uses data from the Family Resources Survey, as the sample size is bigger compared to the FSA's Food and You 2 survey. Additionally, the Family Resources Survey covers the whole of the UK, whereas the Food and You 2 survey only covers England, Wales, and Northern Ireland.

While the intention is to use the Family Resources Survey data as the only source for future iterations of the UKFSR, for this report, data from the FSA's Food and You 2 survey has been included. This is because the FSA's data covers the latter half of 2020, providing some understanding of the impacts the COVID-19 pandemic has had on household food security. The differences between the Family Resources Survey and Food and You 2 are outlined in more detail below.

Data and Assessment

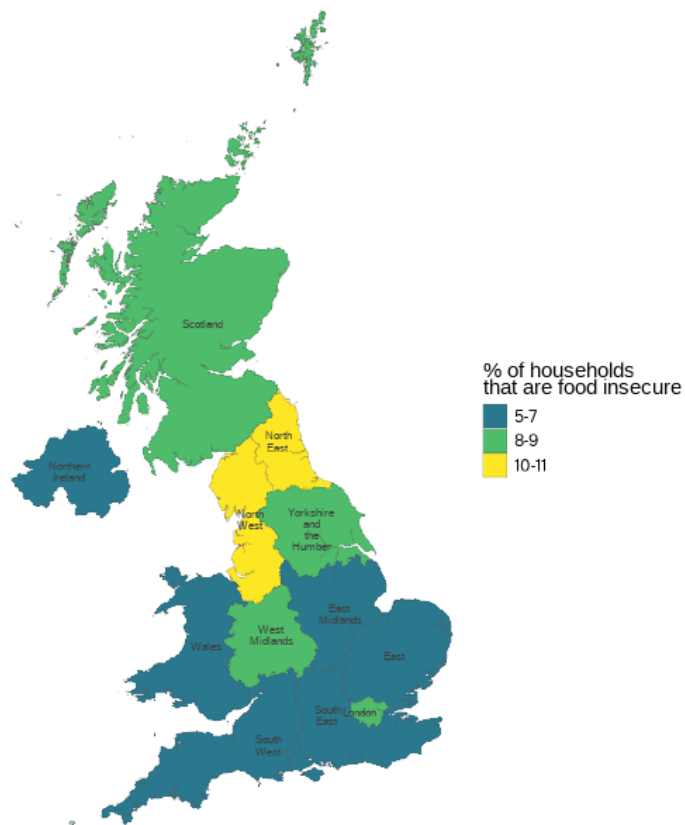
Indicator: Household food security status of all households, FYE 2020, UK

Source: Department for Work and Pensions, Family Resources Survey

Note: A summary of the scoring of food security categories and definitions in the Family Resources Survey can be found in the **Appendix** of this report.

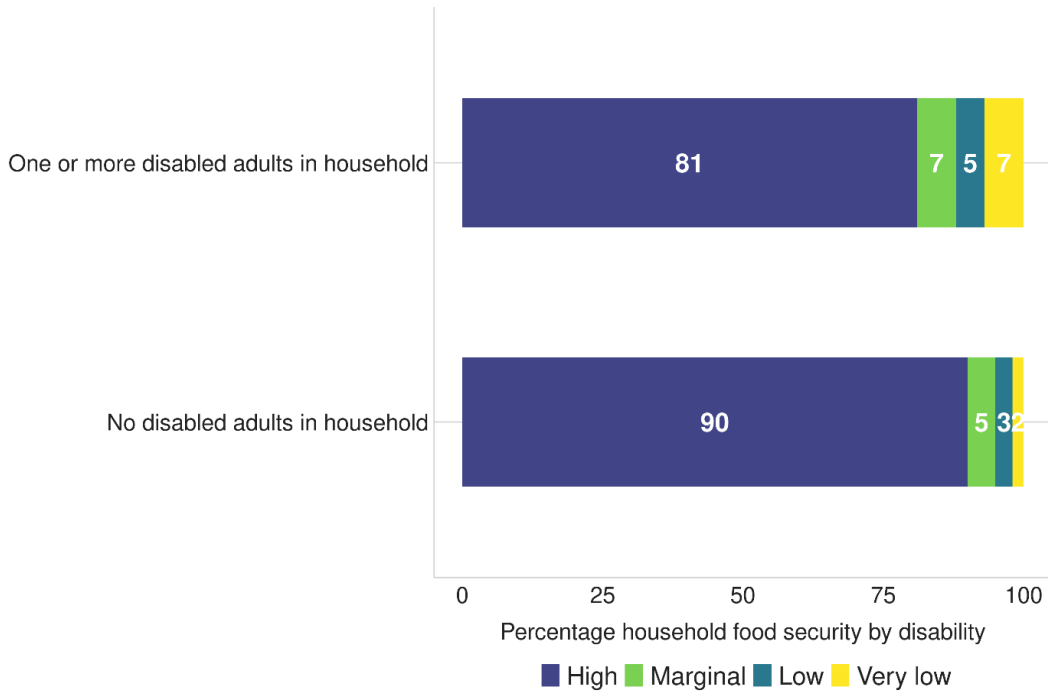
¹⁰⁷ ENUF, 'Food insecurity measurement on the Family Resources Survey' (2019),

Figure 4.1.4a: Household food security by region , FYE 2020



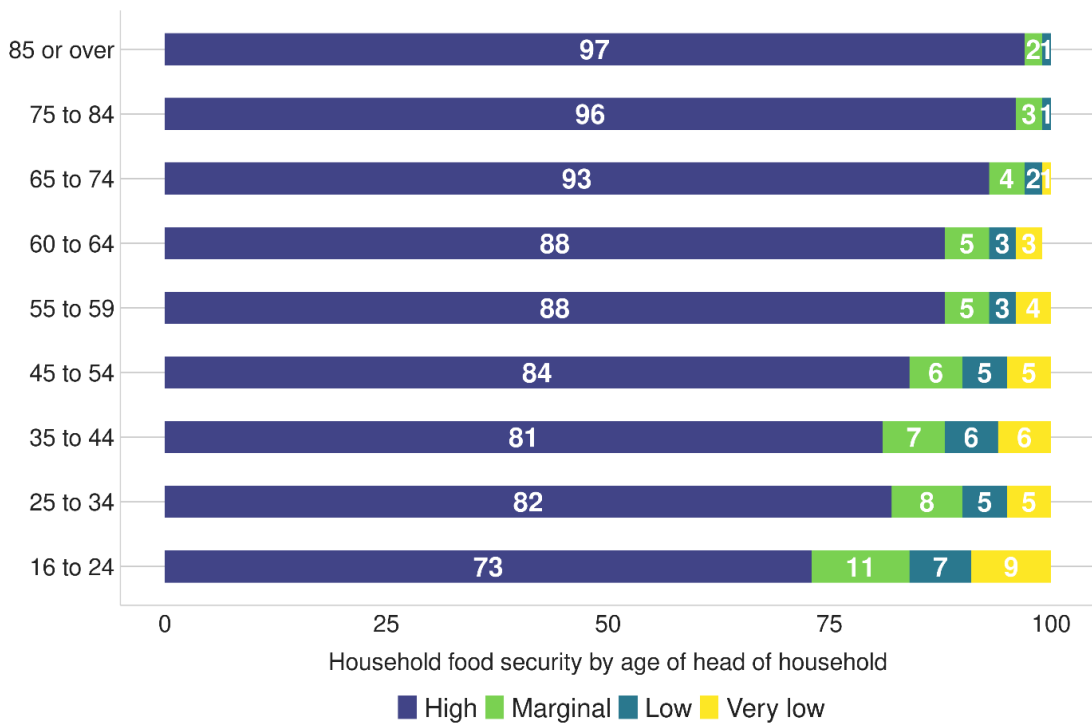
There were regional differences for household food security levels. The North East and North West of England had the lowest levels of food security, at 89% and 90% respectively. The East of England had the highest food security with 95% of households being food secure, and the South East and South West at 94%. Levels of household food security in the four countries of the UK were all similar, with Wales and Northern Ireland at 93% and Scotland and England at 92%.

Figure 4.1.4b: Household food security by disability, FYE 2020



88% of households with one or more disabled people were food secure, compared to 95% of households without any disabled people living in them. In households with disabled people, 7% had very low food security, while only 2% did in households without any disabled people.

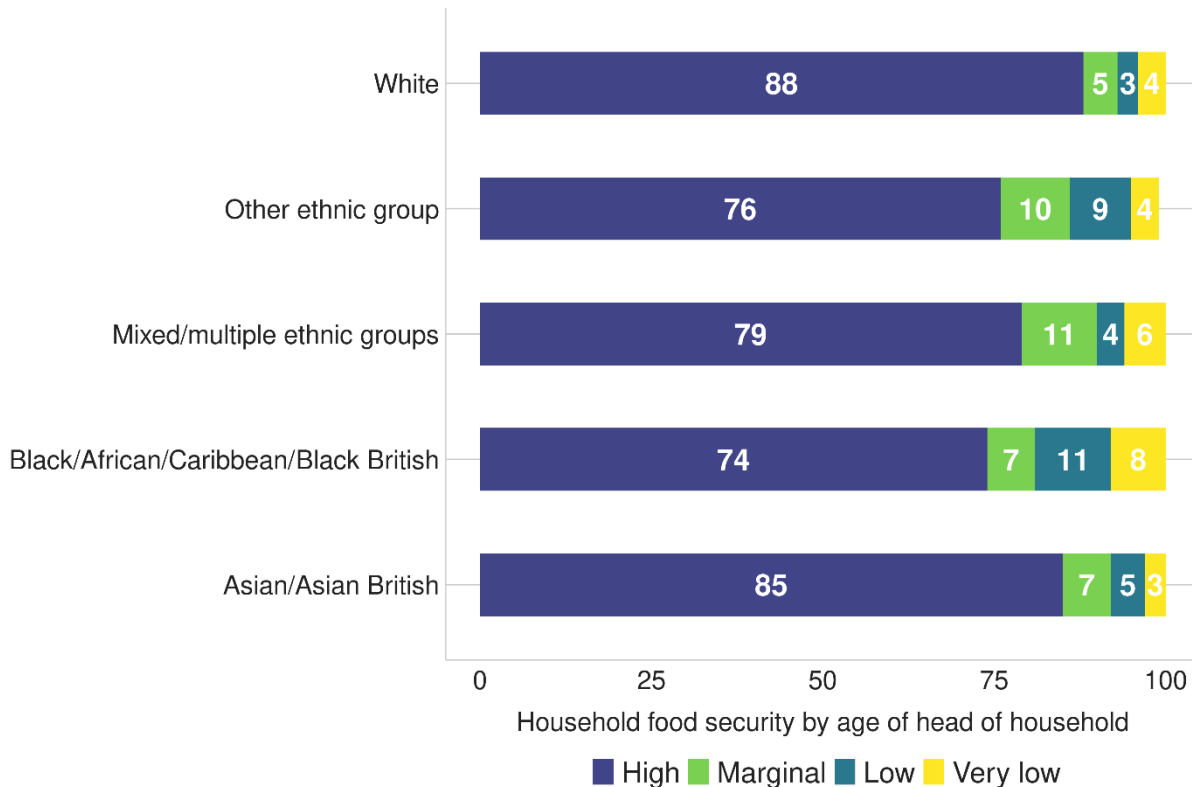
Figure 4.1.4c: Household food security by age of head of household, FYE 2020



Households where the head is younger were less likely to be food secure than households with older heads of household. 15% of households where the head of

household was aged 16 to 24 were food insecure, while only 1% of households with an 85-year-old or over as head of household were food insecure. As the age of the head of household increased, so too did the likelihood that the household was food secure, apart from where the head of household was aged 35-44, where there was a slight decrease in food security.

Figure 4.1.4d: Household food security by ethnicity of head of household, FYE 2020



Heads of households who are White were most likely to be food secure, with 93% being food secure compared to 81% of Black/African/Caribbean/Black British heads of households. 8% of Black heads of households had very low food security, compared to 4% of those whose ethnicity is White. 92% of households headed by an Asian/British Asian person were food secure. Within that category, those headed by an Indian person had the highest food security of all groups, with 95% food secure.

While not displayed in the graphs above, there are further factors that influence a household’s food security. Households with gross incomes of less than £200 per week (7% of households) were the least likely to be food secure (74% high food security, 7% marginal). In comparison, those with gross incomes of £1,000 or more per week (26% of households) were the most likely to be food secure (96% high, 3% marginal).

The composition of the household also played an important role. Households with children (81% high food security; 8% marginal) were less likely to be food secure than households with no children (89% high; 5% marginal). In addition, single-adult households with children were more likely to be food insecure than households with

two or more adults and children. Households receiving state support have differing levels of food security, depending on the type of support they receive. In general, households receiving income-related benefits had 64% high and 11% marginal food security.

Food and You 2 The data on household food security contained in the Family Resources Survey report spans FYE 2020, and thus has only limited overlap with the COVID-19 pandemic. As discussed earlier, the FSA's Food and You 2 surveys used the same 10 questions as the Family Resources Survey but asked about a 12-month period in England, Wales, and Northern Ireland only. Data was collected between July and October 2020 for Wave 1, and between November 2020 and January 2021 for Wave 2, allowing more insight into the impacts of the COVID-19 pandemic.

For Wave 1, 84% of respondents were classified as food secure (72% high, 12% marginal) and 16% were classified as food insecure (9% low, 7% very low). 32% of households with an income below £19,000 experienced food insecurity compared to households earning more than £32,000, where food insecurity levels ranged between 4% and 10%. Age was also an important factor; younger adults, particularly 16 to 24-year-olds, had higher food insecurity levels (16% low, 9% very low) compared to older adults, for instance 55 to 64-year-olds (6% low, 5% very low). Households with a child were also more likely to report food insecurity. 77% of households with children reported that they were food secure compared to 88% of households without children. In addition, food insecurity was more likely to be reported by respondents who were long term unemployed or had never worked (44%) compared to those in most occupational groups (range 11-26%).¹⁰⁸

Overall household food security levels in Wave 2 were similar to Wave 1, where 84% of respondents were classified as food secure (73% high, 11% marginal), and 16% of respondents were classified as food insecure (8% low, 7% very low). Similarly, income levels, age, the presence of children in the household, and the employment status influenced food security levels.¹⁰⁹

Trends

Due to the limited data around household food insecurity and not being able to directly compare the Family Resources Survey results with the Food and You 2 results, it is difficult to give a long-term analysis of any trends. The data indicates, however, that age, disability, ethnicity, regions, income, family composition, and benefits status play a role in the level of household food security.

¹⁰⁸ FSA, 'Food and You 2: Wave 1 Key Findings' (2021), https://www.food.gov.uk/sites/default/files/media/document/fy2-wave-1-report-key-findings_1.pdf.

¹⁰⁹ FSA, 'Food and You 2: Wave 2 Key Findings' (2021), https://www.food.gov.uk/sites/default/files/media/document/fy2-w2-key-findings_review_final_0.pdf.

Indicator 4.1.5 Access to food shops in England

Headline

Household food security depends on physical access to food shops. In the regions of England with the lowest access to food shops, over 95% of the population can reach a food shop within 30 minutes without needing a car, and over 84% within 15 minutes. Data on the issue is currently only available for England. Access to food shops is not equal across regions, with percentages being lower in more rural areas. Trends towards increased use of online shopping and deliveries, and the impacts of the COVID-19 pandemic, are not currently available but will be tracked in future Food Security Reports.

Context and Rationale

Household food security does not only depend on food affordability, but also on the ability of consumers to physically access food shops. Potentially vulnerable are those households without access to a car or means of private transport as well as less mobile individuals such as disabled people or the elderly. Travel distances are higher in rural areas, which typically have a more dispersed population.

What this data does not show is the cost and selection of food available to consumers in their nearest food shop. Groceries at convenience shops can be more expensive than in larger supermarkets, resulting in higher food costs for a household. Some food shops may also have a smaller selection of food, which could limit consumers' choice and ability to meet all their nutritional requirements.

The growing number and scope of online grocery shopping services across the UK have the potential to alleviate some of the difficulties of physical accessibility of food shops. During the COVID-19 pandemic, there was significant demand for online delivery services across the major supermarket chains. Retailers reacted quickly to increase capacity of both delivery services and click and collect services to meet this demand. To support particularly vulnerable groups, government worked closely with retailers to enable priority access to online groceries. There are, however, some barriers to accessing these services, particularly amongst low-income households, disabled people, and the elderly. Some households cannot afford digital devices, meet the minimum spend or the delivery charges required by some retailers, or might not have the necessary skills to access these digital services. In addition, some areas have lower digital connectivity levels.

It is likely that the switch to more online grocery shopping might become permanent amongst certain consumers, and that there is the potential for further businesses to offer these services.

Data and Assessment

Indicator: The number and percentage of households within 15 or 30 minutes of a food shop by public transport/walking

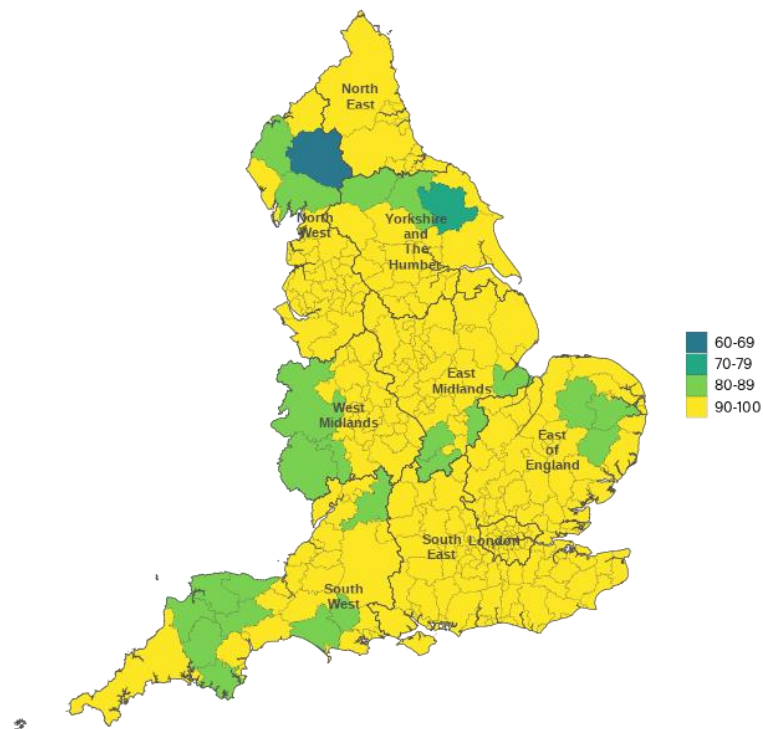
Source: Department for Transport (DfT), 2019, England only

Note: This indicator contains data on England only. The Welsh and Scottish Governments and the Northern Ireland Executive do not regularly collect data on this information. Food shops are defined here as grocery shops, supermarkets, or convenience shops.

The transportation mode 'public transport and walking' used in this data set means that travellers will likely need to walk between their origin and destination and the transport network. For some short journeys, it may be quicker for travellers to walk directly to their destination, rather than using public transport at all. Therefore, public transport and walking results are combined.

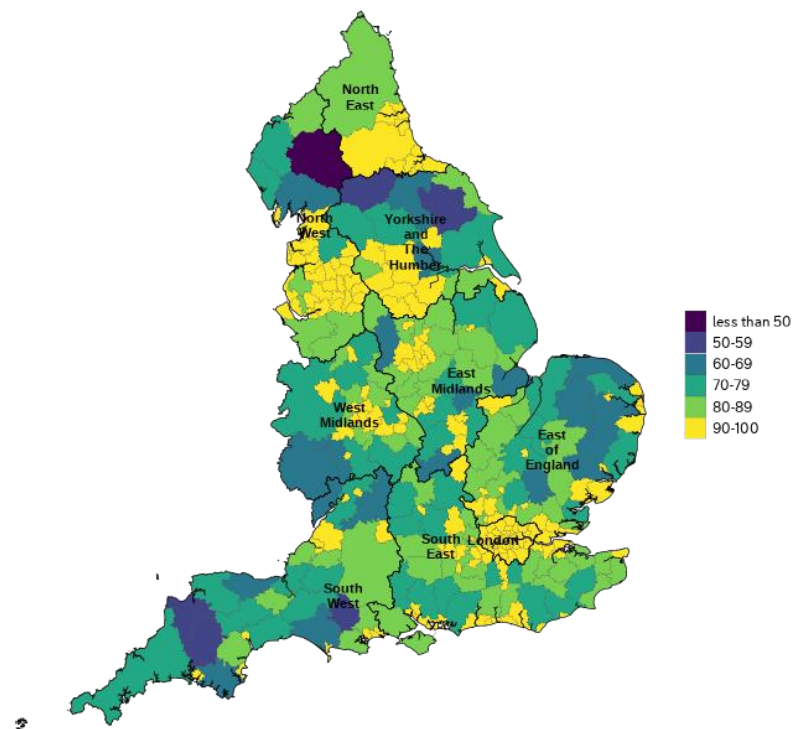
The data shows the percentage of people who can reach a food shop in 30 minutes or 15 minutes by public transport or by walking. The focus lies on this type of transport in favour of cycling or driving as not every household has access to a car or a bicycle, the other modes of transport covered by the DfT data set.

Figure 4.1.5a: Percentage of population in England within 30 minutes of a food shop by public transport or walking, 2019



In all regions taken as a whole, over 95% of the population could reach a food shop in 30 minutes. London has the highest rate at 100% reaching a food shop in 30 minutes, while the South West has the lowest rate at 95.8%. Across England, and at Local Authority level within the regions, there are only a few areas where access within 30 minutes was available to less than 90%: local authorities covering parts of North Yorkshire and Cumbria, parts of the East Midlands, the Welsh border area in the West Midlands, and the rural areas in Devon covering Exmoor and Dartmoor.

Figure 4.1.5b: Percentage of population in England within 15 minutes of a food shop by public transport or walking, 2019



In all regions 84% of the population could reach a food shop in 15 minutes. London has the highest rate at 99.0% in 15 minutes, with the South West having the lowest rate at 84.2% for 15 minutes. It should be noted that the South West also has the highest proportion of their population living in rural areas at 31.6%, while London has the lowest at 0.2%.

At this level, urban centres and population-dense areas are more clearly discernible. There are more parts of England where 70% or less of the population are within 15 minutes of a food store, containing around 1 million households. The remote rural area covering North Yorkshire and Cumbria is more clearly defined.

Trends

This indicator illustrates that accessibility of food shops is not a major issue for most of the population even if they do not have access to a car.

Due to changes in DfT's data collection, the earliest comparable data set for this indicator is from 2015. Between 2015 and 2019, there were not any marked changes in the accessibility of food shops.

Urban areas already have a high saturation of food shops. Opening new shops in rural areas might not be financially viable due to lower customer numbers. Expansion in, and changes to, online grocery offers, such as changes to minimum spend and delivery charges, could improve accessibility rates further. To measure the effect that online grocery shopping has on household food security, a new indicator may be considered for the next iteration of the UK Food Security Report.

While this report does not contain data on food shop accessibility in the devolved administrations (DAs), some research for Northern Ireland suggests low-income households in rural areas may experience food insecurity differently compared to low-income households in urban areas. With rural areas having reduced access to services such as public transport and retail options compared to urban areas, the effects of food poverty can be exacerbated.¹¹⁰

Poverty Premium

There are various approaches to defining what the poverty premium is, but generally it is understood as the extra costs low-income households incur when buying the same goods and services as high-income households. Some of the main drivers behind the poverty premium are based on low-income households' constrained finances, which prevent them from accessing favourable deals. Other factors include the geography and corresponding infrastructure in the area a household resides in, a household's digital access, as well as market failures where the needs of low-income households are not met. People can pay a poverty premium in many areas, including fuel, financial and banking services, transport, housing, insurance, and groceries. Low-income households paying extra costs for services compared to high-income households exacerbates pre-existing inequalities in these households.¹¹¹

With low-income households already spending a higher percentage of their household budget on food than the average household, it is important to understand whether they also face additional costs. A study undertaken by the Institute for Fiscal Studies (IFS) in 2012, as well as other studies conducted in 2009 and 2010, noted that there was no evidence to suggest that low-income households pay more for food, or that they faced a premium by not being able to buy food in bulk. In fact, they

¹¹⁰ McClelland, N., 'Putting food poverty in NI on the map' (2019),

[map](#).

¹¹¹ Davies, S. and others, 'Paying to be poor: Uncovering the scale and nature of the poverty premium' (2016),

stated that many households purposefully buy in bulk to pay lower prices.¹¹² However, the food budget is not the only factor enabling bulk buying. Buying in bulk is contingent on having the facilities to refrigerate or freeze food, and space to store it at ambient temperatures. Access to food shops is more of a challenge for people who do not have such facilities as they must shop more often. Furthermore, those who have limited cooking facilities or who cannot afford to run them may be paying a premium for items such as ready meals.

Geography is an important factor in determining whether low-income households face a poverty premium for groceries. The same IFS report suggests that households living in rural areas without access to a car are more likely to use local shops, where food prices can be higher. More research needs to be done to understand how low-income households without digital access to online food shopping might be impacted financially.

Indicator 4.2.1 Eligibility for Free School Meals

Headline

Eligibility rates for free school meals have been fairly stable across the UK in recent years, with Wales and England seeing an increase from 2018 due to the introduction of Universal Credit and its transitional protection. There was also a further increase between January 2020 and January 2021. This is likely due to COVID-19 impacting households' financial situations as well as the continuing Universal Credit transitional protection measures, which have extended eligibility to more pupils.

Eligibility rates are also expected to increase in Scotland in the coming years due to the staggered expansion of universal free school meals for Primary 4 pupils in August 2021, Primary 5 pupils in January 2022, and all primary school children in August 2022.

Context and Rationale

All four nations in the UK offer the option of free school meals to eligible pupils. Free school meals are intended to support learning and development to ensure that pupils do not miss out on lunch due to financial constraints. To claim free school meals

¹¹² NatCen, 'Advice on the Measurement of the Poverty Premium across UK markets' (2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/782513/natcen_report.pdf.

(outside of the infant free school meals available to all households in England and Scotland), either family or pupil must be claiming particular state benefits. Data from the Family Resources Survey shows that households on these benefits all have below average food security status, except for households claiming pension credits.¹¹³ 57% of households on Universal Credit are food secure compared to 92% of all households. Free school meals data provides important context on households with children which have a low food security status.

Other programmes exist to support pupils' food requirements. These include the School Fruit and Vegetable Scheme in England, the School Holiday Enrichment programme in Wales, as well as the School Milk Scheme and Breakfast Club Programmes available across the UK. This report focuses on free school meals, however, as they provide the most substantial daily meal and reach the largest number of pupils.

Data and Assessment

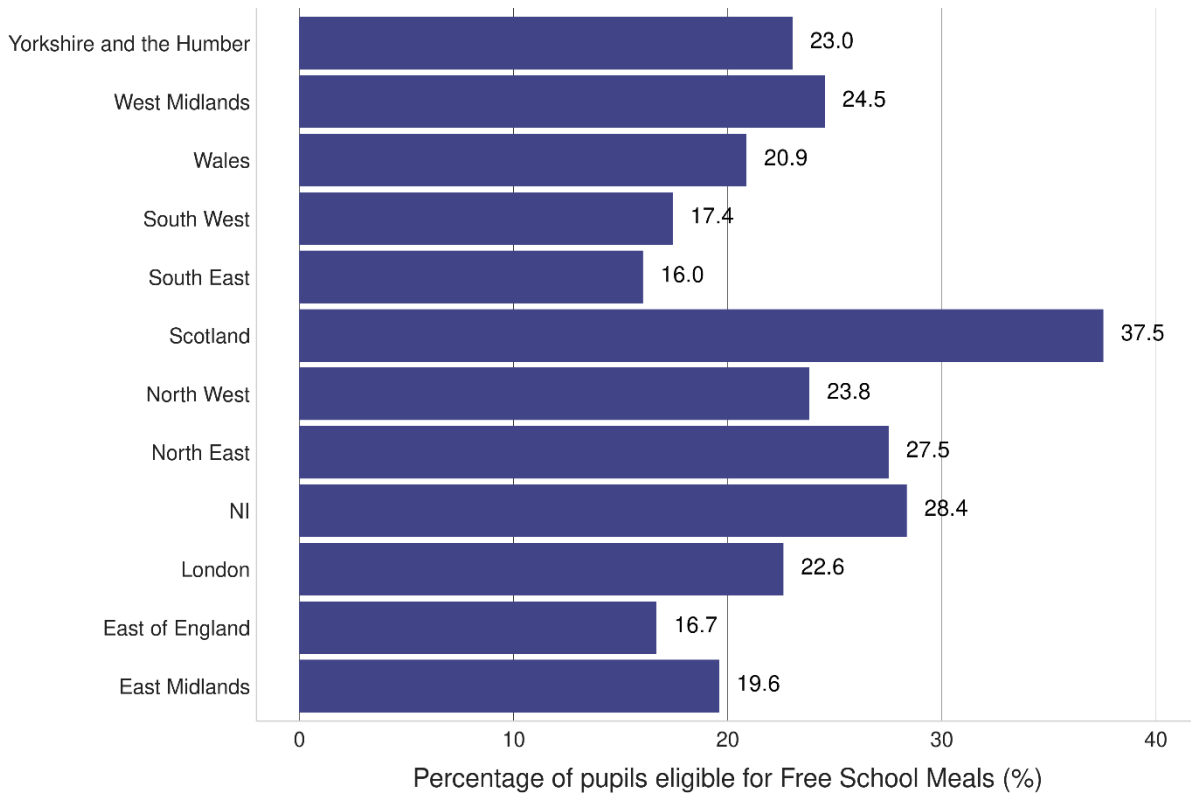
Indicator: Eligibility rates of Free School Meals

Source: Department for Education, Welsh Government, Scottish Government, Northern Ireland Department of Education

Note: The different countries have different eligibility thresholds for Free School Meals. This may impact the levels of eligibility between countries and make direct comparisons between countries more complex.

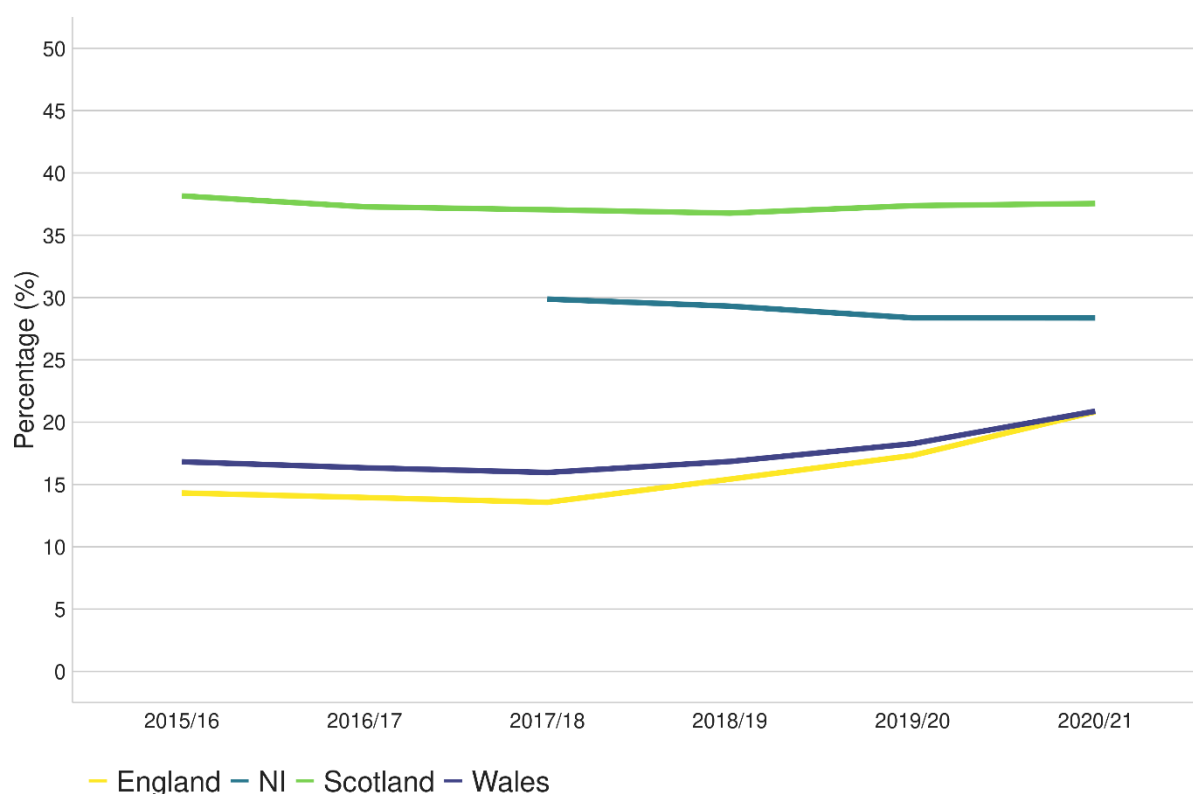
¹¹³ DWP, 'Family Resources Survey', <https://www.gov.uk/government/statistics/family-resources-survey-financial-year-2019-to-2020/family-resources-survey-financial-year-2019-to-2020>.

Figure 4.2.1a: Percentage of pupils eligible for Free School Meals, UK, 2020/21



In FYE 2021 the region or country with the highest proportion of school children eligible for free school meals is Scotland with 37.5%, although the data for Scotland includes all children in primary 1 to 3. Northern Ireland is the next highest with 28.4%, followed by the North East with 27.5%. The region with the lowest eligibility is the South East at 16.0%, followed by the East of England with 16.7%.

Figure 4.2.1b: Percentage of pupils eligible for Free School Meals, UK, 2015/16 – 2020/21



When looking only at the countries, not regions, Scotland had the highest rate in 2020/21 at 37.5% while England had the lowest rate at 20.8%, very slightly lower than Wales with 20.9%.

In the years for which data is available, Northern Ireland and Scotland have both very slightly decreased in their free school meal eligibility rate. Northern Ireland from 29.9% in 2017/18 to 28.4% in 2020/21 and Scotland from 38.2% in 2015/16 to 37.5% in 2020/21. Wales and England have both increased between 2015/16 and 2020/21, Wales from 16.8% to 20.9% and England from 14.3% to 20.8%.

Trends

The increase in eligibility rates observed for England and Wales from 2018 can be attributed to the introduction of Universal Credit and its transitional protection measures, which have enabled more pupils to stay eligible for free school meals. In April 2018, the criteria used to determine which pupils are eligible for free school meals were updated to reflect the introduction of Universal Credit and the phasing out of other income-based benefits. In England, under the updated criteria, the government estimated in 2018 that by 2022 around 50,000 more pupils would benefit from a free school meal compared to the previous benefits system. From 1 April 2018 in England and 1 April 2019 in Wales, transitional protection was also implemented for those pupils who might otherwise have lost free school meals following the update to the eligibility criteria. This means that any existing pupil who no longer met the

eligibility criteria at the point at which Universal Credit was fully rolled out continued to receive free school meals until the end of their current phase of education.

Although trends in eligibility rates have been stable across the UK for the last few years, there have been recent increases that are likely linked to COVID-19 impacts on households' income and the ongoing Universal Credit transitional protection for England and Wales. Between January 2020, before COVID-19, and January 2021, the percentage of pupils entitled to free school meals has increased in Wales and England, but not in Northern Ireland. In England, it has increased from 17.3% to 20.8% and in Wales from 18.3% to 20.9%.

The Scottish Government's annual Schools Healthy Living Survey Report in 2021 did not provide data on the uptake of free school meals. The annual school meals survey which provides data for this report normally takes place every February, but the schools were closed at this point due to the COVID-19 pandemic. The Scottish Government provided local authorities with funding to provide support in lieu of free school meals to eligible families during all periods of school closures. Monitoring returns from local authorities showed this support was reaching up to 175,000 children and young people.

The uptake rates are expected to increase in Scotland in future years. In addition to children in Primary 1 to 3, all children in Primary 4 became entitled to receive free school lunches in August 2021. Universal provision will be extended to all children in Primary 5 in January 2022 and then to all primary school children in August 2022.

Indicator 4.2.2 Take-up of Healthy Start voucher scheme

Headline

Healthy Start vouchers are a scheme in England, Wales, and Northern Ireland to support people on low incomes to access pre-natal vitamins, infant milk formula, and healthy food for young children. In Scotland an equivalent Best Start Foods scheme launched in August 2019. The take-up rate of the Healthy Start voucher scheme was relatively stable between 2019 and 2021. Eligibility rates have increased in England and Wales, and decreased in Northern Ireland between early 2019 and summer 2021. These increases are likely linked to COVID-19 and its impacts on the financial situation of households.

Context and Rationale

The Healthy Start voucher scheme is available in England, Wales, and Northern Ireland. In August 2019, Scotland introduced its own scheme called the Best Start Foods scheme. Both schemes are aimed at enabling low-income families with young children, and women during pregnancy, to access healthy food and vitamins. Beneficiaries need to meet certain criteria determined by their income level, stage of pregnancy, and age of their children to be eligible for the schemes. Once qualified, families receive vouchers, or in the case of the Best Start Foods scheme, a prepaid card, which helps them pay towards products such as infant milk formula, milk, fresh, frozen, or tinned fruits and vegetables, fresh or dried pulses, and vitamins. The Healthy Start scheme is in the process of moving towards a card system as well.

Including data on the take-up rate of these schemes amongst eligible households contributes to the wider picture of household food security. Both schemes provide assistance to households that might otherwise struggle to purchase healthy food during the important development stages of young children.

Due to the Best Start Food scheme in Scotland launching in August 2019, February 2019 data for Scotland is not available to include in this indicator.

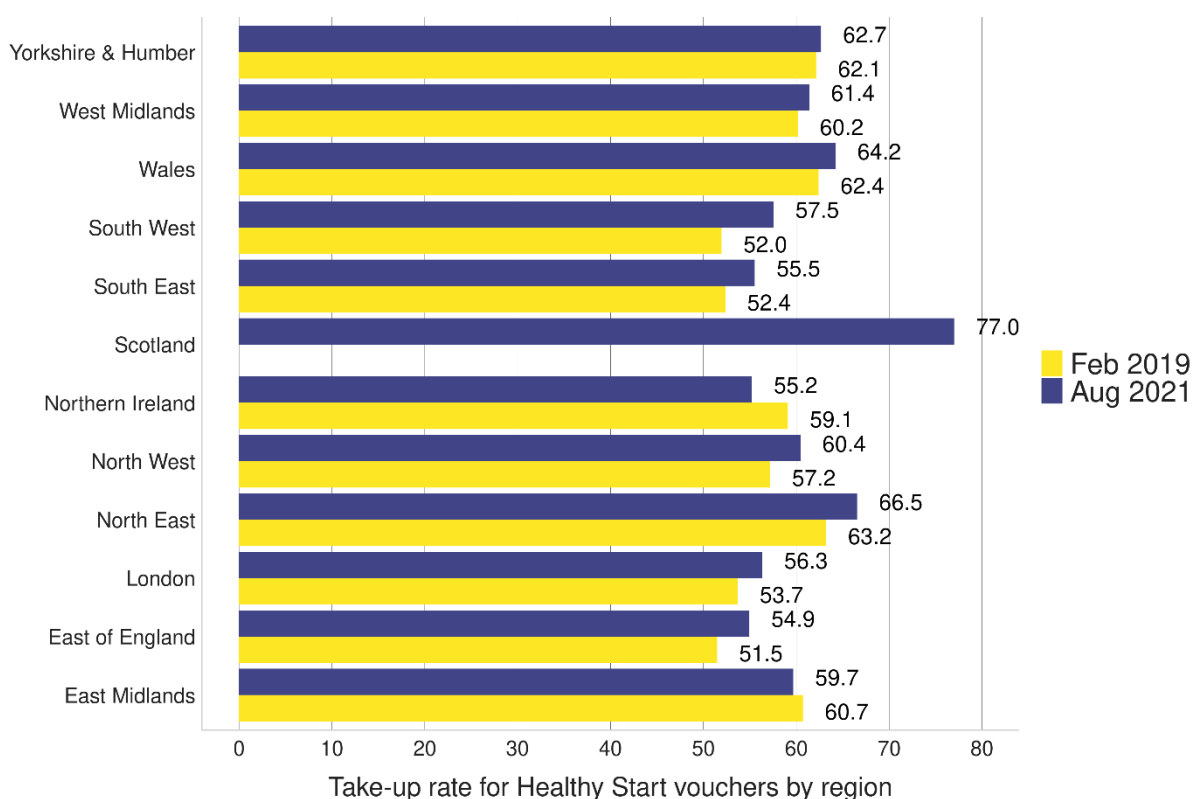
Data and Assessment

Indicator: Take-up rate in the UK

Source: Department of Health and Social Care

Note: The take-up rate shows the percentage of people who have successfully applied for vouchers or payment cards, out of the people who are eligible. This does not mean that the vouchers were spent.

Figure 4.2.2a: Take-up rate for Healthy Start vouchers by region and country, February 2019 and August 2021



In August 2021, the take-up of Healthy Start vouchers (and Best Start payments in Scotland) in the UK was 61.9%, with 376,000 people receiving vouchers or payments. This has increased slightly since February 2019 when the take-up was 57.2%, although this rate did not include Scotland as its scheme did not start until August 2019.

In August 2021 the region with the highest take-up was Scotland, with 77.0% (36,720 people) while in February 2019 it was the North East with 63.2% (16,411 people). Northern Ireland had the lowest take-up rate in 2021 with 56.0% (10,589 people) and East of England did in 2019 with 51.5% (18,670 people).

There has been an increase in the take-up rate in all regions participating in the Healthy Start voucher scheme between 2019 and 2021, except in Northern Ireland which saw a drop from 59.1% to 56.0%. The South West saw the highest increase, rising from a take-up of 52.0% to 59.7%, followed by the East of England which rose from 51.5% to 56.7%.

There has been an increase in the number of people eligible for Healthy Start vouchers and Best Start Food payments in all regions and countries in the UK between February 2019 and August 2021. The highest increase was seen in London at 34.2% while the lowest increase was in Northern Ireland at 12.2%.

Trends

Although the Healthy Start voucher (and Best Start payment) schemes have been available for more than ten years, this report focuses on data from 2019 to 2021 as full data on the total number of people eligible for the scheme was not available prior to 2019. Since 2019, this data has been available, making it possible to draw more meaningful comparisons between different time periods.

While trends have been relatively stable, between February 2019 and August 2021, eligibility in England has increased by 28.8%, in Wales by 18.7%, and in NI by 12.2%. This is likely due to the COVID-19 pandemic and its impacts on households' financial situation.

Case study 4.1 Food Aid

Overview

There is no comprehensive record of the number of organisations providing food aid in the UK. This is because many different types of organisations provide food aid, including registered charities, places of worship, community organisations, schools, hospitals, and commercial and social enterprises. Government data is limited regarding the number of individuals or households receiving food parcels, how many parcels they might have received and over what period. However, DWP has measures in train to improve the official statistics on this subject in the future.

Background

This report defines food banks as organisations that distribute food to those in need. Food banks are seen as emergency crisis provision and are often the last resort for individuals before going hungry. According to the Trussell Trust, 'destitution – and the resulting inability to afford essentials – is the main reason for people needing to use a food bank.'¹¹⁴

Food aid is provided by a very broad range of organisations, including registered charities, churches, schools, hospitals, and community centres. Businesses may support these or distribute food directly. Organisations providing food aid proliferated in wealthy countries, including the UK, after the financial crash of 2007 to 2008. Over the COVID-19 pandemic food banks saw an upward shift in demand as social restrictions in 2020 impacted on peoples' lives and livelihoods, and the government

¹¹⁴ Trussell Trust, 'End of year stats', [REDACTED]

implemented a range of measures to mitigate them. Third sector aid is not widely available for other non-discretionary living expenses such as housing or transport, making food aid an immediate source of support for people in financial hardship.

The two main charitable food bank organisations in the UK are the Trussell Trust and the Independent Food Aid Network (IFAN). In February 2021, there were over 1,300 Trussell Trust food banks in the UK, in addition to over 1,000 independent food banks. Both have reported increases in the number of food parcels distributed.¹¹⁵

Due to the complexity of the food aid landscape, the UK government does not hold data on the precise number of organisations which distribute food aid. Questions related to food aid access have been added to DWP's Family Resources Survey and the results for financial year 2021 to 2022 will be published in 2023. These new questions will assess the number of households accessing food banks within the previous 30 days and will improve government understanding of food aid use and its links to food poverty. This data will be included in future UK Food Security Reports.

Food aid is provided through various means, and to have a thorough understanding of the true scale of the problem requires additional data to fully understand the landscape of food aid and food poverty. Data that DWP are collecting will produce robust official statistics on food bank usage for the first time, and will be an important step forward for the evidence base in this area.

Impact of the COVID-19 pandemic and government response

The COVID-19 pandemic tested the UK's food supply system more than any other time in over 70 years. Businesses across the food supply chain had to adjust rapidly to greatly increased consumer demand. People spent more time at home and ate out less. The overnight closure of many businesses due to lockdown meant that many individuals lost their source of income and had to find alternative ways to feed themselves and their families.

During the period when lives and livelihoods were significantly impacted due to public health restrictions, the government provided significant financial support. As part of its pandemic response, the UK government supported incomes through the Coronavirus Job Retention Scheme ('furlough') with a total of £69.3bn in claims to date, and the Self-Employment Income Support Scheme has paid out over £27bn across all five grants.

In England, £429.1m were given to Local Authorities to provide further support to households struggling with the cost of food and other essentials due to the pandemic. In summer 2020, there was also a £3.5m package of support made available for small food charities through a grant scheme and a further £10m grant assistance

¹¹⁵ House of Commons Library, 'Food Banks in the UK' (2021),

made available to FareShare, a national network of charitable food redistributors, to deliver food to the most vulnerable.¹¹⁶ There was also a package of further support for vulnerable individuals and families during the winter period 2020 to 2021. This package included a further £16m of funding to FareShare to work with local charities and organisations to provide food for those struggling due to the immediate impacts of the pandemic.

In Scotland, amongst wider measures there was £56 million worth of assistance provided in lieu of free school meals to low-income households during school holidays and periods of remote learning. Over £100 million was provided across the Wellbeing, Supporting Communities, and Third Sector Recovery Funds which include supporting a range of food-based activity alongside wider wellbeing action. In 2021 to 2022, the Scottish Government continued to provide assistance in lieu of free school meals to low-income families during the school holidays. In early 2021 the Scottish Government issued a position statement on a human rights approach to tackling food insecurity, and in October 2021 launched a consultation on a national plan to end the need for food banks as a primary response to food insecurity.¹¹⁷

In Wales, amongst wider measures an additional £50.7m was allocated to ensure children eligible for free school meals did not go hungry during school holidays. £2m was awarded under the EU Transition Fund to local authorities in Wales to help build resilience in the food aid network. More than 3,000 food boxes were delivered to independent food banks to help meet an increase in demand. The Voluntary Services Emergencies Fund approved £1m for voluntary projects related to food distribution, and £198,000 was allocated to FareShare to support operations which divert good food from going to waste.

Within Northern Ireland, amongst wider measures, £415,000 was allocated to FareShare to increase the supply of food to charities who support those in food poverty.

The Food and You Survey, discussed in **Indicator 4.1.4**, provides a snapshot of the use of food aid in England, Wales, and Northern Ireland between November 2020 and January 2021, at the height of the second wave of the pandemic. Although this currently only offers one data point, the survey results are recognised as an Official Statistics output. Respondents were asked if their household had received a free parcel of food from a food bank or other emergency food provider in the last 12 months. 90% reported that they had not used a food bank or other emergency food provider in the last 12 months, while 7% reported that they had. The 7% of respondents who had received a food parcel from a food bank or other emergency provider were asked how often they had received one in the last 12 months. 26% had

¹¹⁶ Fareshare, [REDACTED]

¹¹⁷ Scottish Government, 'Food insecurity and poverty - United Nations: Scottish Government response', <https://www.gov.scot/publications/scottish-government-response-un-food-insecurity-poverty/>; 'Ending the need for food banks: a draft national plan', <https://consult.gov.scot/housing-and-social-justice/ending-the-need-for-food-banks/>.

received a food parcel on only one occasion in the last 12 months, 41% had received a food parcel on more than one occasion but less often than every month, and 6% had received a food parcel every month or more often.

Case Study 4.2 Public Sector Food Procurement in England

Overview

Public food procurement impacts almost 24% of the population in England and is an important lever to promote a healthy, sustainable food system, to support economic growth, and deliver a broad range of social, environmental, and health benefits. Defra is responsible for updating the public sector food procurement standards and ensuring any risk of food supply disruption is mitigated. The Department of Health and Social Care (DHSC) is responsible for the nutrition standards in the government buying standards for food and catering services (GBSF).

Background

The GBSF set mandatory and best practice requirements for procurement of healthier, more sustainable food in the public sector in England. The standards were originally introduced in 2011 as a means of demonstrating leadership and providing clarity around what constitutes sustainable, healthy food and catering procurement. The standards will be consulted upon and updated in early 2022 to maximise the intended social, economic, and environmental impact. This may include reporting on key metrics associated with the objectives of the GBSF, enabling government to benchmark and set targets.

It is currently mandatory for central government departments, their executive agencies, and non-departmental public bodies to comply with the GBSF, along with the NHS, armed forces, and HM Prison and Probation Service. The wider public sector is encouraged to, but not mandated, to comply with the standards. For example, the GBSF is referenced by the School Food Standards.

The public procurement landscape is highly fragmented, and there are a wide range of delivery models. Procurement decisions are devolved to individual organisations, such as government departments and agencies, hospital trusts, and schools. In schools, around 40% of catering is outsourced to private caterers, 40% is under local authority control, with the remaining 20% managed in-house where food is procured directly from wholesalers. Large public sector organisations like NHS trusts, the armed forces, and government departments frequently procure food and catering as part of facilities management contracts. These are commonly delivered by a small

number of 'big players' in the market. HM Prison and Probation Service has one national contract with a single wholesaler to deliver prison food, alongside two other contracts for additional provisions.

Discussion

Almost 2 billion meals are served in public sector settings each year.¹¹⁸ Government spend on food is an estimated £2.4bn, which is 5.5% of the UK food service sector turnover. Of the total spend, 29% is in schools, 29% in further and higher education settings, 25% in hospitals and care homes, 11% in the armed forces, 5% in prisons, and 1% in government offices.¹¹⁹ Food eaten in schools could make up as much as 50% of a child's diet in termtime, and for some a free school lunch is their only main meal of the day.¹²⁰ Improving public sector food buying standards benefits all and has the potential to help close the health gap between those from the lowest and highest income households.

Maintaining a secure food supply

Through engagement and monitoring, Defra gathers relevant industry intelligence related to potential food supply concerns and potential risks. The Department for Education, Ministry of Justice, DHSC, and the Ministry of Defence are responsible for public sector food provision within their respective sectors (for schools, prisons, hospitals, social care providers and the armed forces) and a cross government approach to understanding the risks and issues to public sector food supply is taken. Lead government departments regularly meet with suppliers to understand potential issues. Defra closely monitors and proactively engages with public sector food service providers in the wholesale sector to understand emerging risks.

The economic viability of the food service wholesale sector, notably larger companies, is not considered at risk. Monitoring, however, and close collaboration between government and industry continues following the COVID-19 pandemic.

In the event of food supply disruption, or when risks emerge that may result in disruption, Defra will convene and chair with Cabinet Office a Public Sector Food

¹¹⁸ Defra, 'National Food Strategy: Independent Review', <https://www.gov.uk/government/publications/national-food-strategy-for-england>, page 253.

¹¹⁹ Defra, 'A plan for public procurement: food and catering' (2014), <https://www.gov.uk/government/publications/a-plan-for-public-procurement-food-and-catering>.

¹²⁰ Royston, S. and others, 'Fair and square: a policy report on the future of free school meals', The Children's Society (2012),

Working Group. This group provides a forum for government departments to jointly discuss broader strategic concerns that impact the public sector food supply chain, share intelligence and mitigations. Lead government departments can enact enhanced engagement directly with their suppliers to understand the risk landscape and agree to mitigations such as substitution, menu modifications, and potential relaxation of standards if required.

Theme 5: Food Safety and Consumer Confidence

This chapter of the UK Food Security Report looks at food security in terms of the extent to which consumers are confident in the overall safety and authenticity of the food they eat and the supply chain that delivers it. Public trust in UK food, both in the UK and overseas relies heavily upon confidence in food safety, food standards and confidence in a high-quality food regulatory regime. Without public trust in food safety and standards the UK food supply chain could be undermined. Safe food produced to high standards is integral to food security: it protects public health, reduces the economic and social burden of foodborne disease and food hypersensitivity, and contributes to economic growth and international trade. This theme provides data on the key factors that underpin confidence in the UK food system and risks to this, such as food business compliance with food safety regulation, food safety incidents and recalls, levels of foodborne disease, and activity to disrupt food crime.

Key messages

- The majority of consumers in the UK trust the food they buy and eat to be safe and accurately labelled, when prompted consumers express concern around animal welfare, environmental issues, nutrition, and food production methods.
- Food business compliance with food safety regulation has remained high with slight increases in all four countries of the UK in the past six years, although there is some year-to-year variation.
- Laboratory confirmed reports of pathogens causing foodborne gastrointestinal disease in the UK and the proportional trends in foodborne disease outbreak surveillance data generally remained relatively stable over the period 2015 – 2019.
- Although food safety incident reports have increased since 2010, this is attributable to better detection and higher levels of reporting rather than an increase in risk.

Both safety and consumer confidence in the food system are key to national food security. If there are products which people are not confident in eating, or if doing so actively risks undermining health, this could effectively reduce supply.

The UK nations have a strong regulatory base to ensure the confidence and safety of the UK food supply is maintained. Within this regulatory context it is the responsibility of food businesses to ensure that all food placed on the market is

safe, that its quality is what consumers would expect, and that it is not labelled in a false or misleading way. Consumers are responsible for the safe preparation and storage of food in the home and for checking labels to make sure that food is suitable for them to eat.

In the context of assessing UK food security, the effectiveness of the UK's regulatory system for food safety is paramount. Metrics to monitor confidence in the system, indicators to track compliance, challenges which could undermine confidence and realised risks (incidents) help to illustrate this.

Consumer confidence in the food system and its regulation

Confidence in food systems is key to food security. It ensures that physical supplies of food are fully utilised and reduces the risks of consumer demand shocks which may result from product substitution through loss in confidence in some elements of the system. Food regulation is a cornerstone of the maintenance of high standards and confidence in authenticity and safety.

The food system is complex, and its regulation involves multiple bodies. Risks to consumers are varied, including foodborne disease, food allergic reactions or intolerances, risks associated with food crime such as the misrepresentation or adulteration of food and risks arising from mislabelling. Food regulation, and its enforcement, are designed to prevent or reduce these risks. Critical interventions include legislation, enforcement regimes, cross-government and cross-agency working, and partnership working with industry, food sector, and consumer bodies nationally and internationally.

Food and feed safety, including incidents, food poisoning, outbreaks, allergens and intolerances, recalls and risks associated with food crime are regulated by the Food Standards Agency (FSA) in England, Wales, and Northern Ireland, and by Food Standards Scotland (FSS) in Scotland. These independent government departments work with local authorities to enforce food safety regulations and check that standards are being met. The use of the best scientific evidence and analysis available enables effective responses to food incidents and outbreaks. This includes surveillance work to monitor and prevent potential risks to food.

Consumer trust in the FSA and FSS is high. In England, Wales, and Northern Ireland, 78% of consumers who have some knowledge of the FSA trust the FSA to make sure food is safe and what it says it is, and in Scotland 77% of consumers trust FSS. In England, Wales, and Northern Ireland 93% of consumers are confident that the food they buy is safe to eat and 89% are confident the information on food labels is accurate. In Scotland, 68% of consumers trust the information on food labels. In England, Wales, and Northern Ireland consumers report most confidence in farmers (88%) and shops and supermarkets (87%) and

least confidence in takeaways (70%) and food delivery services (52%). While time series data is available in Scotland, for consistency trends are not presented due to changes in how data were collected by the FSA in 2020 in the rest of the UK.

Most consumers in England, Wales, and Northern Ireland (88%) report no concerns about the food they eat. When prompted, the most common concerns amongst respondents in England, Wales, and Northern Ireland are the amount of sugar in food (60%), food waste (60%), and animal welfare (57%). When presented with a separate list of issues, respondents in Scotland are most concerned about animal welfare (79%) and the use of pesticides, hormones, steroids, and antibiotics in growing or producing food (77%).

Food business compliance with food safety regulation

It is the responsibility of food businesses to ensure that all food placed on the market is safe. Compliance with food safety regulation is an indicator of good food hygiene practices among those who handle food and is associated with a lower risk to consumers. Across England, Wales and Northern Ireland the percentage of establishments that are found on inspection to be broadly compliant or better with food hygiene law has increased from 89% in 2014/15 to 90.4% in 2019/20. In Scotland, compliance with food hygiene increased from 88% in 2015/16 to 93% in 2020/21, and compliance with food standards has remained high at 99% over the same period. Since 2017/18 food hygiene and food standards inspections in Scotland have been combined into a single food law inspection, and the food law compliance status has increased from 92% in 2017/18 (the first year of the scheme) to 96% in 2020/21.

Food safety incidents, alerts and recalls

A food incident occurs when concerns around the safety or quality of food may require action to protect consumers. Incidents broadly fall into two categories: contamination during food processing, distribution, retail or catering, and environmental pollution such as fires and chemical leaks. Numbers of food safety incidents are not a direct measure of food security. Fluctuations in numbers reflect a diverse range of factors. However, whilst it is unlikely that a food safety incident would cause an overall shortage to food supply, it could impact specific products within the food supply chain and undermine consumer confidence in food safety.

Incidents, food poisoning, outbreaks, allergens and intolerances, recalls and risks associated with food crime, are regulated by the FSA in England, Wales, and Northern Ireland, and by FSS in Scotland. These independent government departments work with local authorities to enforce food safety regulations and check that standards are being met. The use of the best scientific evidence and

analysis available enables effective responses to food incidents and outbreaks. This includes surveillance work to monitor and prevent potential risks to food.

The number of food safety incidents reported has increased; much of this is due to better ways of detection and increased voluntary reporting by food businesses and does not necessarily indicate a change in the food and feed safety profile of the UK. The types of incidents that are reported, however, provide an insight into the causes of incidents and the associated risks. These include detection of pathogenic micro-organisms, residues of veterinary medicinal products, chemical contamination, as well as allergens.

The number of food recall notices has remained relatively stable. The number of allergy alerts increased when new legislation required better labelling of allergenic ingredients in 2017 but has remained small: no more than 2 in any of the last 3 years.

Prevalence of foodborne pathogens and outbreak surveillance

For overall food security in the UK, it is important that the food consumed is safe to eat and does not constitute a threat to consumers' health. While not all gastrointestinal infections caused by organisms such as bacteria, viruses, or protozoa, are foodborne, food is an important vehicle of transmission for many gastrointestinal pathogens that cause a substantial public health burden.¹²¹

The UK Health Security Agency (formerly Public Health England), Public Health Wales (PHW), Public Health Scotland (PHS), and Public Health Agency Northern Ireland (PHA) are the lead agencies responsible for the protection of public health in the four nations. While these executive agencies do not have direct statutory powers to enforce legislation in relation to food safety, they are responsible for the surveillance of infectious gastrointestinal disease, including disease caused by pathogens that pose a food safety risk in the UK. This includes the identification, investigation, and management of foodborne disease outbreaks.

The four most significant bacterial pathogens that may contaminate food are *Campylobacter*, non-typhoidal *Salmonella*, Shiga toxin-producing *E. coli* O157 (STEC O157), and *Listeria monocytogenes*.

Campylobacter sp is the most commonly reported bacterial gastrointestinal (GI) pathogen. *Campylobacter* reporting showed a marginal overall increasing trend

¹²¹ World Health Organisation, 'Estimates of the global burden of foodborne diseases', 2015

from 2015 to 2019, with a peak in reporting of 102.3 cases per 100,000 population in 2018. *Salmonella* is the second most commonly reported bacterial GI pathogen; reporting remained relatively stable during 2015-2019, with a peak of 15.2 cases per 100,000 population in 2018.

STEC O157 and *Listeria monocytogenes* are less commonly reported but reported cases have higher rates of severe illness than *Campylobacter* and *Salmonella*. For both STEC O157 and for *Listeria monocytogenes* there has been a slight decrease in laboratory confirmed reports between 2016 to 2019, although there are some year-to-year fluctuations. For STEC O157 the decrease in reporting rate was from 1.35 to 1.07 per 100,000 population, and for *Listeria monocytogenes* the decrease was from 0.29 to 0.23 per 100,000 population, although low numbers of reported cases complicate interpretation of trends for *L. monocytogenes* infection.

The 2020 foodborne pathogen surveillance data indicators cannot be compared to the data from previous years, as a substantial and sustained reduction in reporting of gastrointestinal pathogens to national surveillance has been observed coinciding with the SARS-CoV-2 (COVID-19) pandemic. The impact is likely multi-factorial and related to the introduction of non-pharmaceutical interventions (NPIs) to control the pandemic, as well as other factors so trend analysis for the data presented in this report should only be considered for 2015 – 2019, with exclusion of 2020 data.

An 'outbreak' is defined as an incidence of two or more human cases of the same disease, linked to the same source. Specifically in relation to foodborne disease outbreaks it is where the cases are linked, or are probably linked, to the same food source. In total, the UK public health agencies investigated and reported 276 foodborne disease outbreaks during the period 2015-2020, with nearly 10,000 associated human disease cases. The proportional trends in causative pathogens, hospitalisation rates, associated foods implicated in the outbreak investigations, and outbreak settings remained relatively stable over the period 2015 to 2019 and generally consistent with that seen in the previous decade. However, the implementation of whole genome sequencing since 2015 and the COVID-19 pandemic in 2020 have impacted on this data indicator.

Food Crime

Food crime interventions demonstrate the UK food safety authorities' ability to receive, assess, and respond to intelligence concerning food crime. The FSS's Scottish Food Crime and Incidents Unit (SFCIU) and the FSA's National Food Crime Unit (NFCU) are responsible for tackling food crime in Scotland, and England, Wales, and Northern Ireland respectively.

Disruptions are a recently implemented measure of food crime interventions which stop or reduce the opportunity for food crime offending and in doing so, increase UK food security by ensuring food is safe. Recorded disruptions from the NFCU and successful operations by the SFCIU demonstrate the delivery of activity to stop or reduce the overall scale of food crime across the UK.

The NFCU began recording food crime disruptions in 2020/21. Data shows a steady increase in the number of disruptions recorded through the year attributed to improvements in operational capability and a greater focus on, and awareness of, the full scope of disruption strategies. Overall, NFCU recorded 190 disruptions to food crime, with 52 Pursue disruptions and 138 Prepare, Prevent or Protect disruptions being delivered. The SFCIU was involved in a significant number of investigations during 2020/21 which had various intervention and disruption strands, and are developing an approach to capture the percentage of actionable intelligence that resulted in a positive outcome.

Indicator 5.1.1 Consumer confidence in the food system and its regulation

Headline

Consumer trust in the FSA and FSS is high. Most respondents in England, Wales, and Northern Ireland are confident that the food they buy is safe to eat and that the information on food labels is accurate. In Scotland, the majority of respondents trust the information on food labels. Consumers in England, Wales, and Northern Ireland have more confidence in farmers and shops and supermarkets compared to takeaways and food delivery services

Context and rationale

A loss of consumer trust (either domestic consumers or international trade partners) in food safety can lead to reduced demand and significant economic impacts which in turn can threaten whole sectors of the economy. A fall in consumer confidence can also erode trust in how government and industry communicate risk to the public. Attributes such as safety, sustainability, and authenticity cannot be verified by the consumer at the point of purchase, so consumers must rely on others to communicate this information.

Data and assessment

Indicator: Proportion of consumers reporting confidence in food safety (FSA), proportion of consumers reporting confidence in accuracy of food labelling (FSA and FSS), trust in food regulators (FSA and FSS).

Source: FSA; FSS

Figure 5.1.1a: FSA respondents' confidence that food is safe to eat: Food and You 2, Wave 2 (2021)

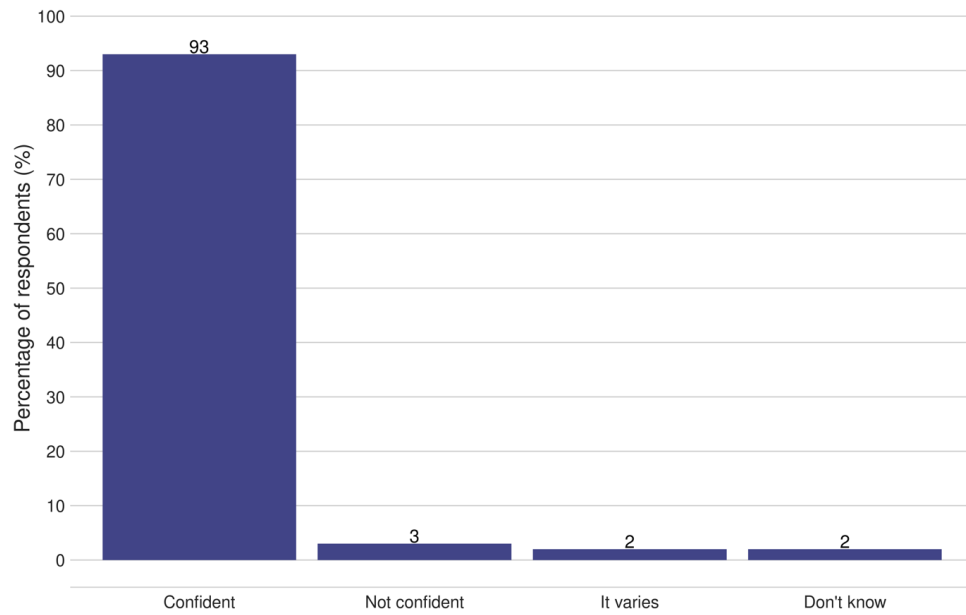


Figure 5.1.1b: FSA respondents' confidence that information on food labels is accurate: Food and You 2, Wave 2 (2021)

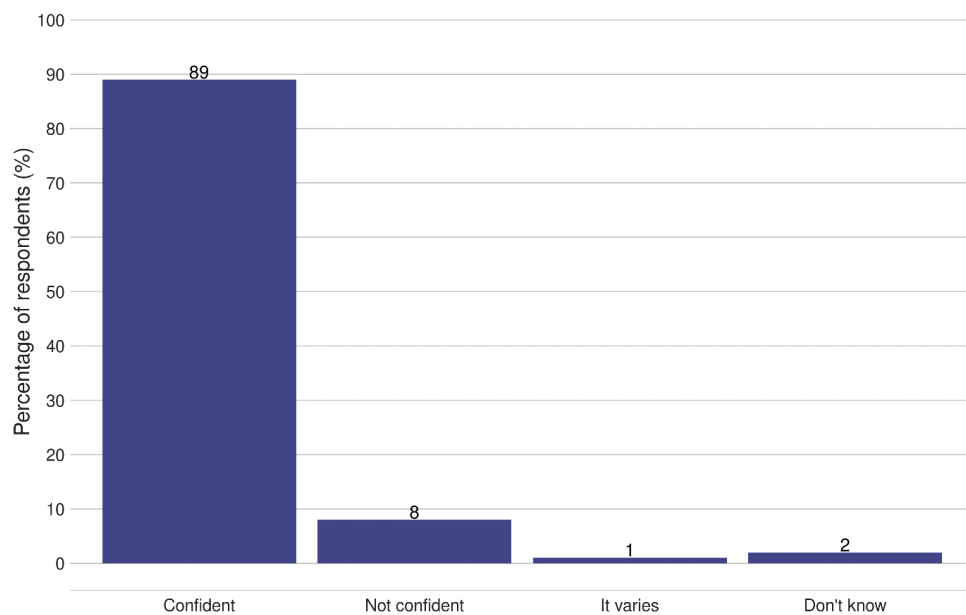
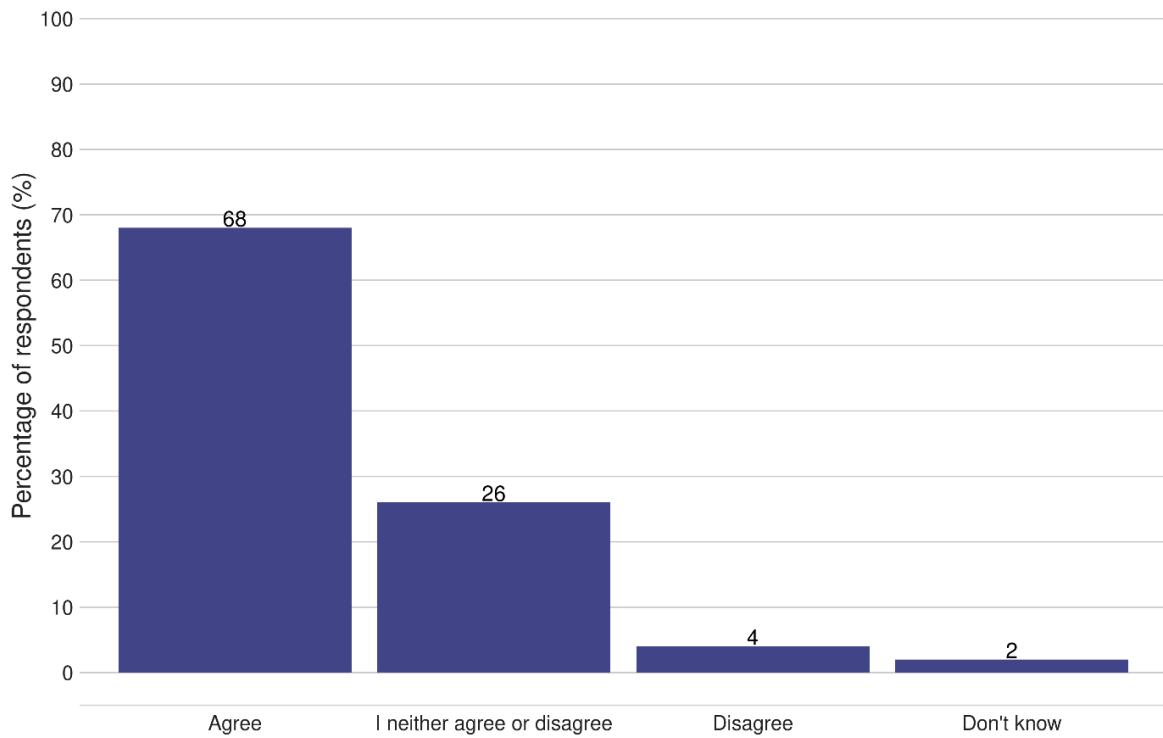


Figure 5.1.1c: FSS respondents' trust in the information on food labels: Consumer Tracker Survey, Wave 11 (2021)



In 2020 to 2021 the majority of respondents (93%) in England, Wales, and Northern Ireland reported that they were confident that the food they buy is safe to eat. 89% of respondents reported that they were confident that the information on food labels, for example, ingredients, nutritional information, country of origin, is accurate. 68% of respondents in Scotland agreed with the statement “I trust the information on food labels” with 4% disagreeing with the statement.

Figure 5.1.1d: FSA respondents' trust in the FSA: Food and You 2, Wave 2 (2021)

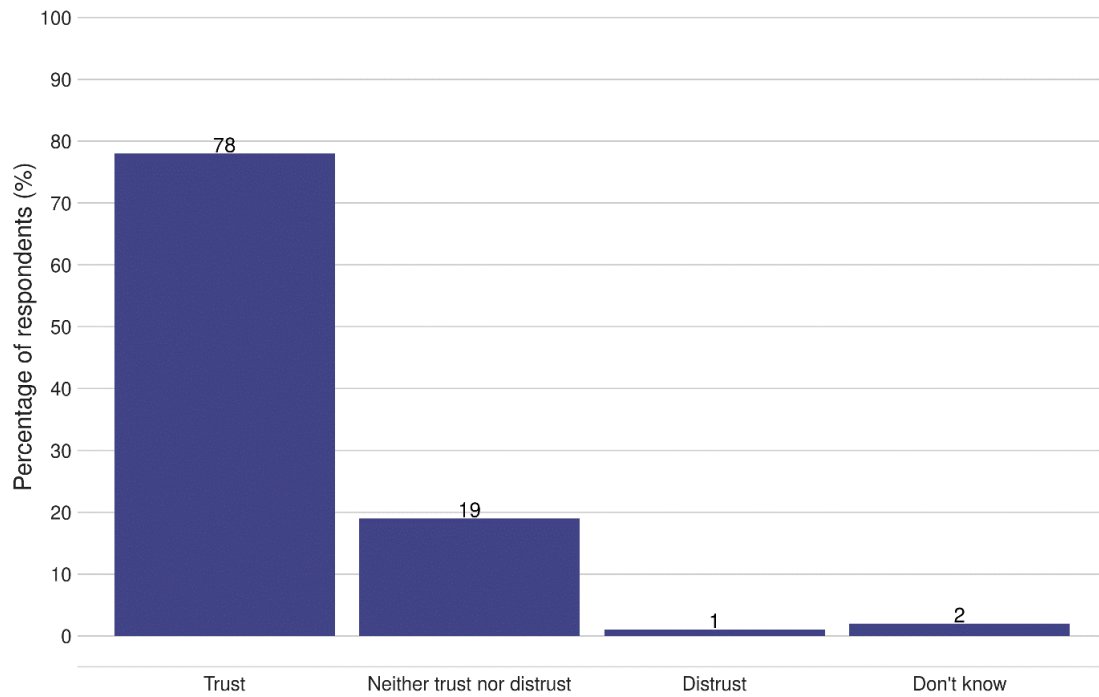
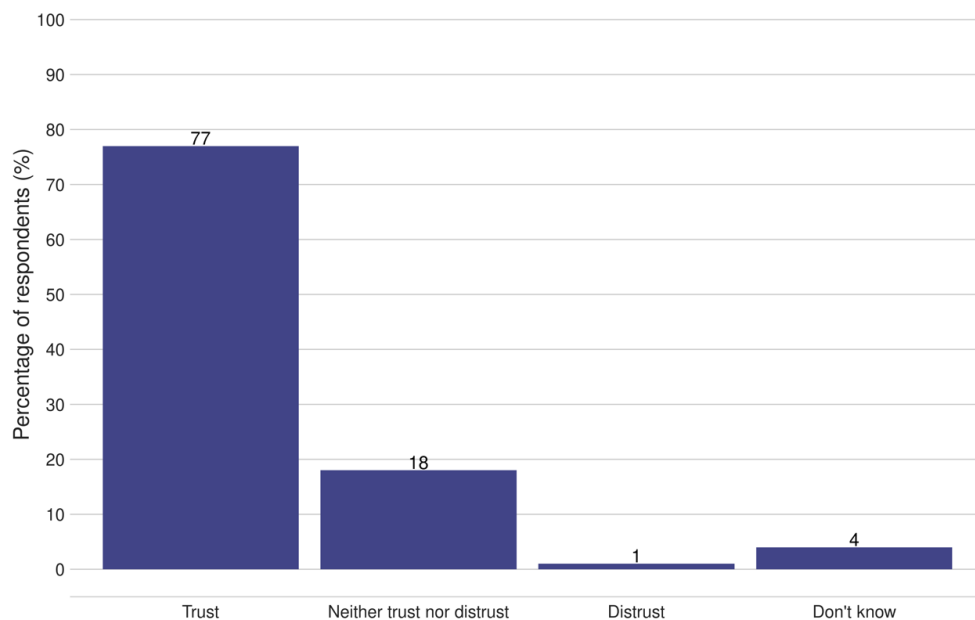


Figure 5.1.1e: FSS respondents' trust in FSS: Consumer Tracker Survey, Wave 11 (2021)



Amongst the sample in England, Wales, and Northern Ireland, 52% knew a lot or a little about the FSA and what it does. Of those consumers who have at least some knowledge of the FSA, trust in the FSA is high with 78% of respondents reporting that they trust the FSA to do its job (that is to make sure that food is safe and what

it says it is). 1% of respondents reported that they distrust the FSA. Respondents in Scotland had very similar levels of trust in the FSS with 77% of respondents reporting that they trust FSS and only 1% reporting that they distrust the organisation.

Figure 5.1.1f: FSA respondents' confidence in the food supply chain: Food and You 2, Wave 2 (2021)

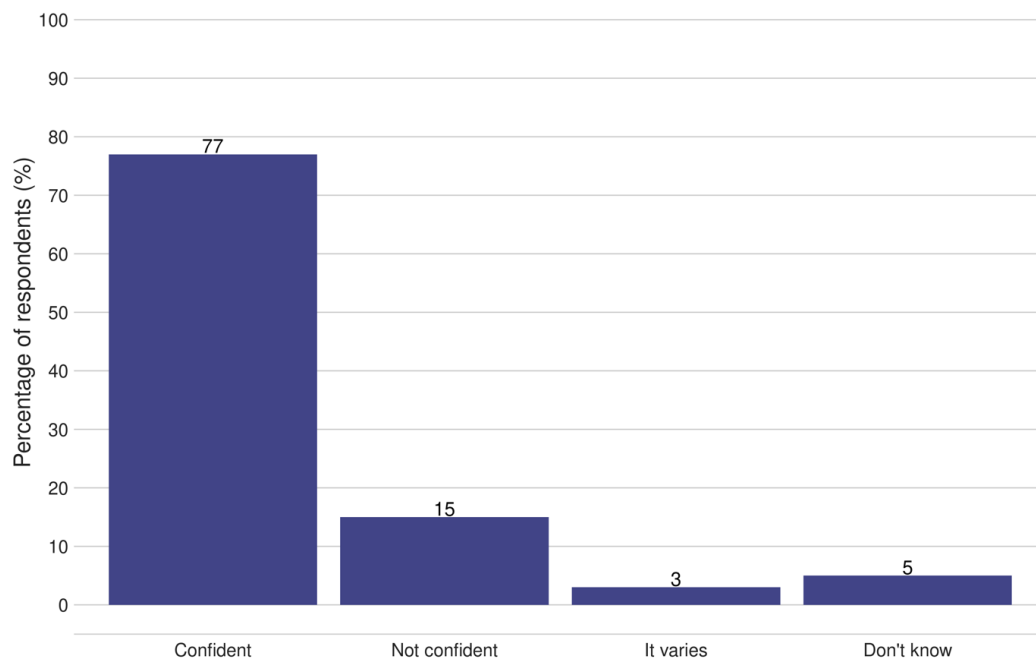
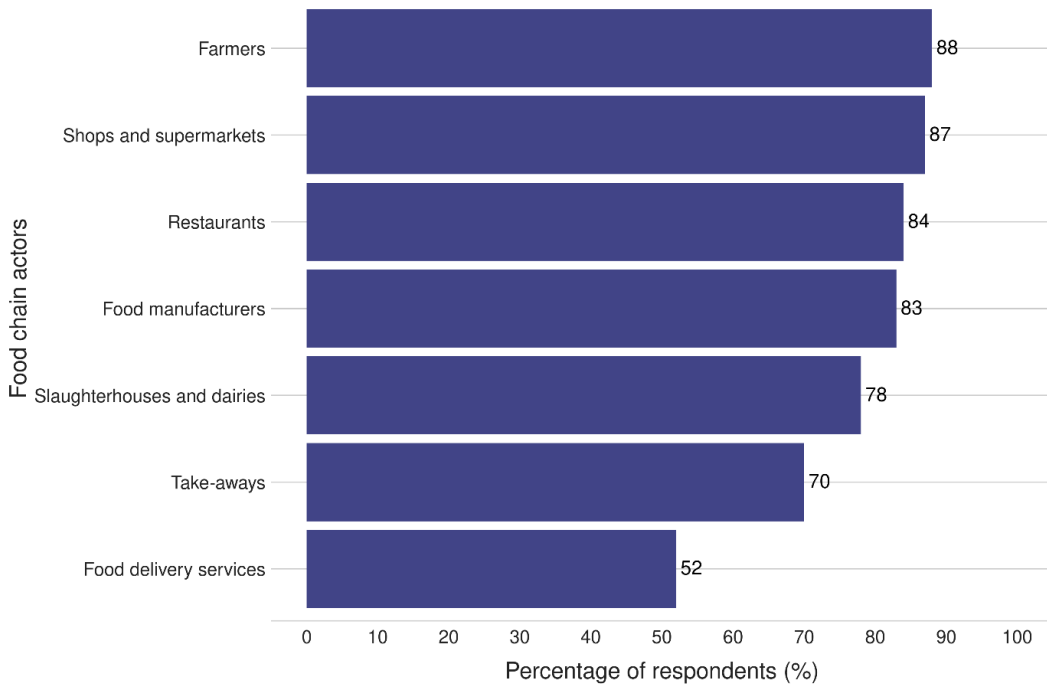


Figure 5.1.1g: FSA respondents' confidence that food supply chain actors ensure food is safe to eat in: Food and You 2, Wave 2 (2021)



Amongst consumers in England, Wales, and Northern Ireland, confidence in the overall food supply chain was high with 77% of respondents reporting that they were confident in the food supply chain. When respondents were asked to indicate how confident they were that key actors involved in the food supply chain ensure that the food they buy is safe to eat, respondents were more likely to report confidence in farmers, shops and supermarkets, restaurants, and food manufacturers compared to takeaways and food delivery services.

Trends

FSA undertook a wholesale review of its Food and You 2 survey methodology in 2020 to enable more frequent and more flexible surveying so robust trend data is not available for this report. However, the high levels of consumer confidence reported are similar to those recorded in the previous surveys.

Time series data is available for Scotland on some of these data, however for consistency these have not been included within this report.

Indicator 5.1.2 Consumer concerns

Headline

Most people in England, Wales, and Northern Ireland report no concerns about the food they eat. When a list of potential concerns are presented, the most common concerns amongst respondents in England, Wales, and Northern Ireland are the amount of sugar in food, food waste, and animal welfare. When presented with a separate list of issues, respondents in Scotland are most concerned about animal welfare and the use of pesticides, hormones, steroids, and antibiotics in growing or producing food.

Context and rationale

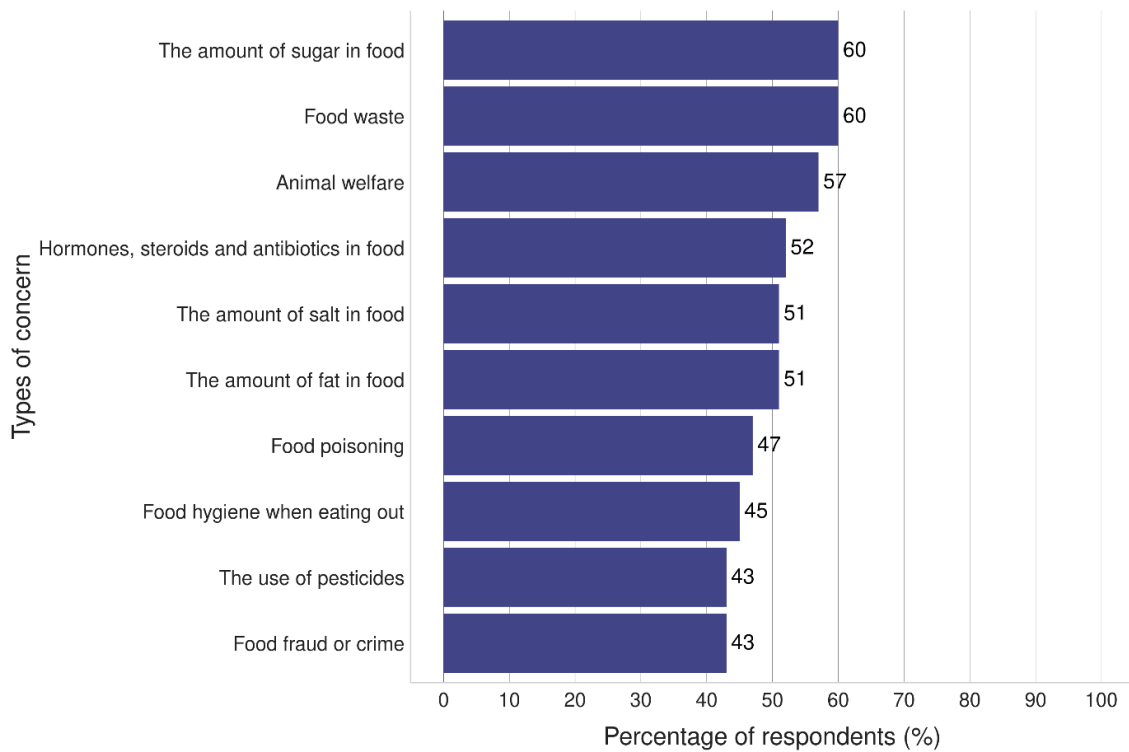
There are many constituent parts of the food system, and consumers may have concerns about one or more of these parts. Understanding which areas of the food system are of most concern to consumers is important for policy development, risk communications and advice, and ensuring consumers can make informed choices about the food and drink they purchase.

Data and assessment

Indicator: Proportion of respondents reporting concern from a list of issues

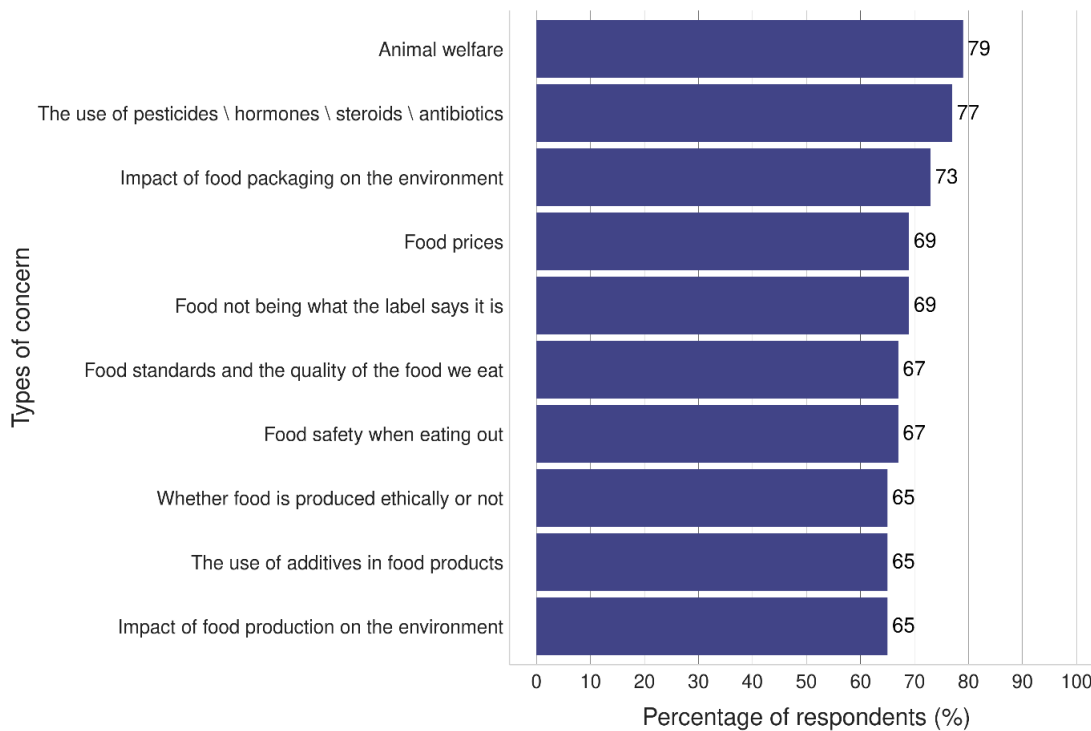
Source: FSA; FSS

Figure 5.1.2a: FSA respondents – ten most common prompted concerns: Food and You 2, Wave 2 (2021)



Most respondents in England, Wales, and Northern Ireland (88%) had no concerns about the food they eat. However, when asked to indicate if they had concerns about a number of food-related issues from a list of given options, the most common concerns amongst consumers in England, Wales, and Northern Ireland were the amount of sugar in food (60%), food waste (60%), and animal welfare (57%). 43% of respondents reported being concerned about food fraud or crime (for example, food not being what the label says it is).

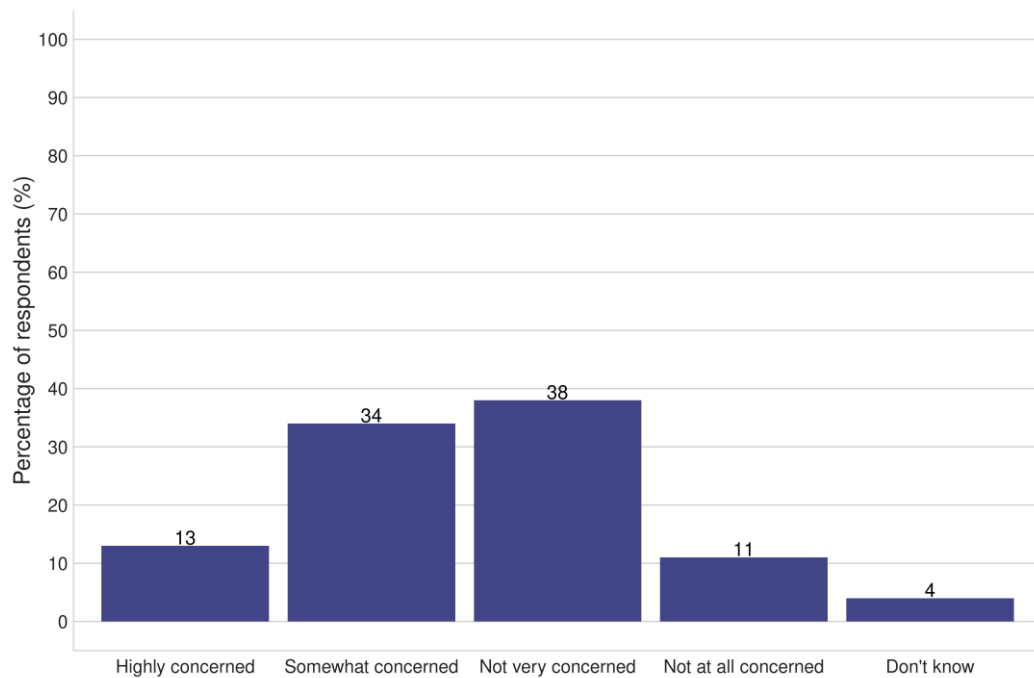
Figure 5.1.2b: FSS respondents – ten most common prompted concerns: Consumer Tracker Survey, Wave 11 (2021)



Animal welfare was the top concern amongst consumers in Scotland, with 79% of respondents in Scotland choosing this. 77% of respondents reported that some food production methods or inputs such as pesticides or antibiotics were also a concern. 69% of respondents were concerned about food not being what the label says it is.

It should be noted that respondents in Scotland would have selected concerns from a different set of survey options compared to respondents in England, Wales, and Northern Ireland as the methods of data collection differ substantially between surveys.

Figure 5.1.2c: FSA respondents' concern about availability of food: Food and You 2, Wave 2 (2021)



Respondents in England, Wales, and Northern Ireland were also asked specifically about the extent to which they were concerned about the availability of a wide variety of food; 13% of respondents were highly concerned, 34% somewhat concerned, 38% not very concerned and 11% not at all concerned.

Trends

FSA undertook a wholesale review of its Food and You 2 survey methodology in 2020 to enable more frequent and more flexible surveying so robust trend data is not available for this report. However, the consumer concerns reported are similar to those recorded in previous surveys.

Time series data is available for Scotland on some of these data, however for consistency these have not been included within this report.

Case Study 5.1 Allergen information on Food Pre-packed for Direct Sale

Overview

Government has a key role to play in setting the regulatory framework to ensure that consumers are provided with the information they need to allow them to make safe food choices.

In 2019, following the death of teenager Natasha Ednan-Laperouse, Defra, the FSA, and FSS reviewed the legal framework for allergen information for food which is pre-packed for direct sale (PPDS). They also consulted on proposed amendments relating to the provision of mandatory information, the form of expression and the presentation of allergen labelling information for PPDS foods.

Background

PPDS is food packaged at the same premises where it is sold or offered to consumers and is also in its packaging before it is ordered or selected.

In the UK, it is estimated that 1% to 2% of adults and 5% to 8% of children have a food allergy. This equates to around 2 million people living in the UK with a food allergy, but this figure does not include those with food intolerances.

There is no cure for food allergies and intolerances. The only way to manage the condition is to avoid food that makes the person ill. Therefore, it is important that consumers are provided with accurate information about allergenic ingredients in products to allow them to make safe food choices.

Discussion

Natasha died as a result of an allergic reaction to sesame in a baguette she had eaten. The inquest into Natasha's death highlighted that food which is offered to consumers in a package without any allergen information can be dangerous.

During the consultation, consumers were clear that they wanted more information about the food they are eating provided on food labels.

Defra, the FSA, and FSS worked together to introduce the Pre-packed food for Direct Sale Regulations from 1 October 2021. The introduction of this new requirement is supported by online training and guidance.

This will help protect food hypersensitive consumers by requiring potentially life-saving allergen information to be highlighted with an ingredients list with the 14 major allergens emphasised on the label of pre-packed food for direct sale. The change means more food products will now have allergen labelling.

Case Study 5.2 Codex

Overview

The UK is widely respected for its technical expertise and is influential in international standard setting. By working to deliver improved global food standards, the UK supports both global and domestic food safety and security.

Background

The Codex Alimentarius is a collection of internationally adopted food standards and related texts that aims to protect consumer health whilst ensuring the safety, quality, and fairness of international food trade. While voluntary, Codex standards serve in many cases as the basis for national legislation. In 2019, the UK provided £500k to the Codex Trust Fund to support eligible developing countries' participation in Codex. Understanding and participating in the work of Codex means countries benefit from increased food safety, security, and harmonisation with global standards which in turn increases their opportunity to trade internationally.

Discussion

The UK is an influential member of Codex and is widely respected for its technical expertise. Steve Wearne, the FSA Director of International Affairs, was one of three Codex Vice-Chairs from 2017 to 2021 and notably led the work on creating and adopting the current Codex Strategic Plan. Steve Wearne has recently been elected as the new Codex Chairperson and this role will help the UK build stronger relations with all Codex members.

To improve global food standards and protect consumers, the UK will share its expertise as co-chair for new Codex work on food fraud. The work aims to develop guidance to improve risk management activities and the exchange of information between authorities and government agencies related to the prevention of food fraud that may impact the health and safety of the consumer and/or disruption of trade.

The COVID-19 pandemic highlighted more than ever the need for good hygiene practices and the importance of the General Principles of Food Hygiene which is used globally as a benchmark for national hygiene rules. The 'General Principles'

serves as the foundation hygiene text. It is cross-referenced with other Codex guidelines and sector and product-specific codes of practice as a means of ensuring that basic food hygiene measures are adopted in the production, processing, and distribution of food commodities along the entire food supply chain.

The UK successfully led the work to update this Codex text when it chaired the working group on the revision of the principles. The key actions for change were to revise the text to clarify the key concepts and terms used and simplify the text. Through the electronic working group and plenary discussions, additional changes were made. This included moving to a risk-based approach to water being fit for its intended purpose and introducing significant text on 'food safety culture' within the section on management commitment.

The UK has long recognised the value of food safety culture in determining compliance and influencing behavioural change to improve compliance. In 2012 the FSA developed a Food Safety Culture Diagnostic toolkit for inspectors for local authorities. This was to support the assessment of food safety management during food hygiene official controls, with a particular focus on micro and small businesses.

With the increasing global and national interest in business culture and its relationship with regulation, the FSA decided to look again at food safety culture and its potential role as part of a modernised regulatory system, work on which is ongoing.

Indicator 5.1.3 Food business compliance with food safety regulation

Headline

Across England, Wales and Northern Ireland the percentage of establishments that are found on inspection to be broadly compliant or better with food hygiene law has remained high. In Scotland the compliance status in terms of food hygiene within food business establishments has continued to increase for the same period, and compliance status for food standards has stayed consistent over the period.

Context and Rationale

Compliance with food safety regulation is an indicator of good food hygiene practices among those who handle food. The FSA is responsible for monitoring and reporting on the performance of local authority food law enforcement services

in England, Wales, and Northern Ireland. Within Scotland, FSS is responsible for monitoring and reporting on local authority food law enforcement.

Local authorities carry out a range of proactive and reactive interventions at food establishments. Planned checks and interventions, including inspections are carried out in line with the Food Law Codes of Practice in England, Wales, and Northern Ireland.¹²² In Scotland planned checks and interventions, including inspections are carried out in line with the Food Law Code of Practice 2019 for food hygiene, at a planned frequency in accordance with a business' risk rating. In England, Wales, and Northern Ireland businesses are rated from A to E, with 'A' being highest risk and 'E' lowest risk. Higher risk businesses receive such interventions more frequently than lower risk ones. The Local Authority Enforcement Monitoring System (LAEMS) was used to collect annual data until 2019/20. For food standards a new delivery model is being developed and is currently being piloted. For this reason, comparable compliance data is not available.

In Scotland, these category descriptors were reversed when FSS started to gradually move from the previous risk rating scheme to the new Food Law Rating System (FLRS) in 2018. Within this E and D premises are the highest risk and A, B and C are lower risk. Until 2017, annual data in Scotland was collected electronically from the LAEMS. However, following the introduction of the Scottish National Database (SND), data was collated electronically from that system.

Compliance data for 2020 to 2021 in England, Wales and Northern Ireland is not available due to the implementation of the local authority Recovery Plan as part of the COVID-19 response. This suspended the LAEMS data collection and has been temporarily replaced with bespoke surveys to monitor progress against the plan. A new system of reporting is under development in England, Wales, and Northern Ireland.

Data and assessment

Indicator: Food business operation compliance status

Source: England, Wales, and Northern Ireland: The Local Authority Enforcement Monitoring System (LAEMS) data; Scotland: The Local Authority Enforcement Monitoring System data and the Scottish National Database (SND).

¹²² FSA, 'Food and Feed Codex of Practice' (2021), <https://www.food.gov.uk/about-us/food-and-feed-codes-of-practice>.

In England, Wales and Northern Ireland the FSA tracks the proportion of food establishments that are broadly compliant (equivalent to a Food Hygiene Rating Scheme score of 3 or above).

In Scotland, Food Law (FL) compliance refers to the compliance status under the Food Law Rating Scheme (FLRS), the new risk rating scheme gradually implemented in Scotland in 2018. The compliance categories for the FLRS are A-C. In 2015/16 and 2016/17 the FLRS had not been implemented, therefore there were no FL interventions carried out. Within the former risk rating scheme, which was previously set out in Annex 5 of the Food Law Code of Practice in Scotland, food hygiene (FH) and food standards (FS) compliance categories were E-C for food hygiene and C and B for food standards. Since 2018, new inspection cycles within existing premises and initial inspections in new premises has seen more premises move across to the FLRS risk rating and less premises being inspected under the previous Annex 5 scheme.

While the precise definitions of compliance between Scotland and other three countries are slightly different, both relate to the assessment of an establishment's adherence to food law during an inspection, and so are broadly comparable.

Figure 5.1.3a: Compliance status of inspected food business operators in England, Wales, and Northern Ireland (including unrated establishments).

	2014/15 ¹²³	2015/16	2016/17	2017/18	2018/19	2019/20 ¹²⁴	2020/21
England							
% broadly compliant or better	88.7%	89.2%	89.8%	89.8%	90.4%	90.0%	Not collected
Wales							
% broadly compliant or better	92.1%	92.6%	92.6%	93.5%	93.1%	92.7%	Not collected
Northern Ireland							
% broadly compliant or better	91.5%	93.0%	91.2%	95.4%	94.1%	95.4%	Not collected
Total							
% broadly compliant or better	89.0%	89.5%	90.0%	90.2%	90.7%	90.4%	Not collected

¹²³ Based on nine months data for Northern Ireland. During 2013/14 preparations were underway for local government reorganisation. In view of this, it was agreed that returns for councils for 2014/15 should be made in advance of the changes becoming effective and would cover the first three quarters of the reporting period.

¹²⁴ The 2019/2020 data for England was based on 98% of expected food hygiene returns (all but six returns were received). Wales and Northern Ireland data was for 100% returns received.

Figure 5.1.3b: Compliance Status of premises within Scotland (excluding unrated establishments).

The data within Figure 5.1.3b represents percentage calculations on inspected premises.

Scotland Data: Compliance Status of Food Businesses												
Year	2015/16		2016/17		2017/18		2018/19		2019/20		2020/21	
Compliance Status Food Law (%)	Not collected		Not collected		92		97		97		96	
Compliance Status Annex 5 (%)	FH	FS	FH	FS	FH	FS	FH	FS	FH	FS	FH	FS
	88	99	88	99	89	99	90	99	93	99	93	99

From 2014/15 to 2019/20, the percentage of establishments broadly compliant or better for food hygiene requirements has remained high across all four countries.

Trends

Between 2014/15 and 2019/20 the proportion of food establishments that were 'broadly compliant' with food hygiene requirements or better (equivalent to an FHS rating of 3 or higher) across England, Wales and Northern Ireland has been relatively consistent (89% in 2014/15; 90.4% in 2019/20).

In Scotland the compliance status of food establishments has increased slightly; in 2014/15 food hygiene (FH) compliance status was 88%, this rose to 93% in 2019/20. The food standards (FS) compliance status has stayed consistent. In addition, for FLRS the compliance has increased from 92% in 2017/18 to 96% in 2020/21.

Levels of compliance have been consistently high over the last 6 years. Compliance with food safety and standards regulations is associated with a lower

risk to consumers, with higher levels of compliance associated with less risk of foodborne outbreaks and unsatisfactory microbiological samples.¹²⁵

Indicator 5.1.4 Food safety incidents, alerts, and recalls

Headline

The number of food safety incidents reported has increased; much of this is due to better ways of detection and increased voluntary reporting by food businesses and does not necessarily indicate a change in the food and feed safety profile of the UK. The types of incidents that are reported, however, provide an insight into the causes of incidents and the associated risks. These include detection of pathogenic micro-organisms, residues of veterinary medicinal products, chemical contamination, as well as allergens.

The number of food recall notices has remained relatively stable. The number of allergy alerts increased when new legislation required better labelling of allergenic ingredients in 2017.

Context and Rationale

The Food Law Codes of Practice, which cover the UK, outline the definition of a food incident, and the roles and responsibilities of the FSA, FSS, and enforcement authorities for food incidents. The Codes define a 'food incident' as "any event where, based on the information available, there are concerns about actual or suspected threats to the safety, quality or integrity of food that could require intervention to protect consumers' interests." The Feed Law Codes of Practice, which cover the UK, define feed incidents in a similar way.

The number of notified incidents is influenced by several factors such as the introduction of new regulations, consumer trends, advancement in science and technologies, various government led initiatives and increased reporting. Therefore, the data included in this report on the number of incident notifications is only meant to provide an understanding of the number of incidents the FSA and

¹²⁵ FSA, 'Evidence of relationship between food business hygiene compliance and measures of food safety (2019), <https://www.food.gov.uk/research/research-projects/evidence-of-relationship-between-food-business-hygiene-compliance-and-measures-of-food-safety>.

FSS have been made aware of in each Reporting Year. The data is not a clear indicator of any changes in risks to the UK's food security. The break-down of the incidents into various categories, on the other hand, provides an insight into the various hazards or areas of concern that cause food incidents in the UK. The trends in these categories can be a useful indicator to assess where key risks lie.

The FSA and FSS investigate the same incident types but have different categorisation or reporting systems. Incident notifications are categorised according to the potential hazard that is under investigation or that is ultimately of concern. So, where no risk to the safety, quality or integrity of food and feed is identified, the incident may still be classified by the potential issue of concern.

The food, feed and drink supply chains are complex and involve numerous food chain actors from primary producers, to processors, packaging providers and retailers or restaurants. There are multiple points in the supply chain where potential hazards can be detected and communicated to regulators who can then in turn alert consumers.

The FSA and FSS issue alerts to let consumers and food businesses know about problems associated with food, feed, and drink and what action they need to take. These notices and alerts are an important way of communicating to consumers where they need to act and are issued at the FSA's and FSS's earliest opportunity and published online. In addition, point of sale notices are displayed at each of the affected stores for a given time. This is aimed at informing consumers who may have not received the alert through the online platforms.

The alerts indicate a formal response to food safety risks in the food supply chain. The majority of food alerts issued by the FSA and FSS are Product Recall Information Notices and Allergy Alerts (AAs).

A Food Alert for Action (FAFA) is issued to local authorities in cases where a food business operator demonstrates that it cannot or will not adequately recall or withdraw products which fail to meet the safety requirement, and which require specific urgent actions to be taken by local authorities. Very few Food Alerts for Action, which are issued when a food business operator does not adequately comply with safety requirements, have been issued. This indicates that most food business operators comply with the safety requirements laid out in law.

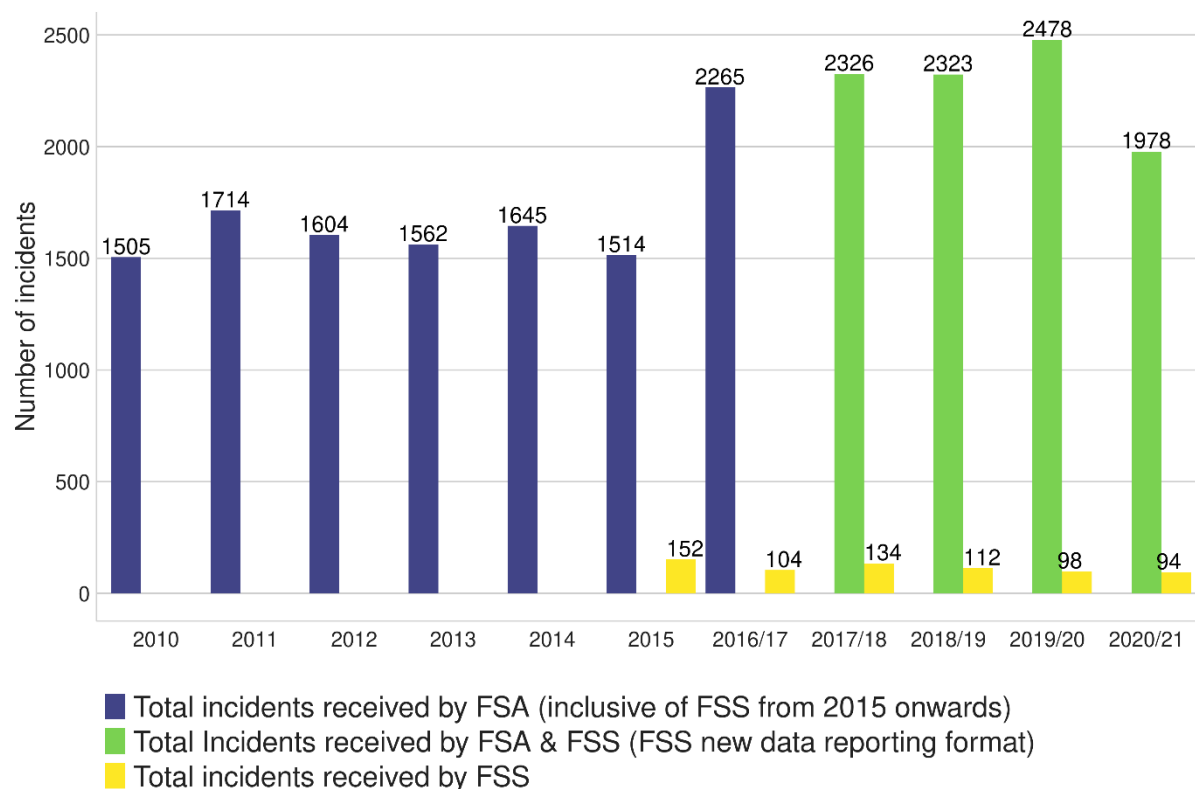
UK food safety bodies are rolling out several incident prevention strategies, the initial focus is the full implementation of the use of root cause analysis (RCA) by industry, enforcement authorities and FSA with analysis and reporting of data; such that root causes can be used to identify themes and underlying trends to help prevent incidents occurring. In addition, strategic surveillance workstreams have developed a number of models based on open and non-open-source data which harness the power of data science to identify emerging risks before they become risks to public health.

Data and assessment

Indicator: Total number of incident notifications received by the FSA and FSS from 2010 to 2021, recalls and alerts issued by the FSA and FSS from 2010 to 2021.

Source: FSA and FSS

Figure 5.1.4a: Total number of incident notifications received by the FSA and FSS from 2010 to 2021



In 2017 and 2018, FSS moved to a new data reporting format. Hence, there may be some duplications in the incident figures if the same incident is investigated by both the FSA and FSS.

In 2015 Reporting Year, the 1,514 figure is inclusive of 152 FSS incident notifications. In 2016/2017 Reporting Year, the 2,265 figure is inclusive of 104 FSS incident notifications. From 2017/2018 Reporting Year onwards, there may be some duplications if an incident is investigated by both the FSA and FSS.

Overall, there was a steady rise in incident notifications between 2010 and 2020 with a notable increase in years 2016 to 2017 due to a reporting change, from reporting year to financial year. More broadly, the year-on-year increase can be attributed to several factors including the introduction of new regulations, advancements in technology, science and analytical methods. These have led to

better detection and reporting as well as detection of new hazard types including clandestine traveller (stowaways) in food vehicles. The number of notifications received represents how many incidents the FSA and FSS have been made aware of and is not indicative of a change in the UK's food and feed safety profile. Instead, it is more instructive of changes in behaviours, technology, and statutory requirements.

Figure 5.1.4b: FSA breakdown of incidents by category during 2013 to 2021 Reporting Years¹²⁶

	2013	2014 /15	2015 /16	2016 /17	2017/ 18	2018 /19	2019 /20	2020 /21
Biological Origin	477	509	478	504	470	468	531	475
Pathogenic Micro-Organisms	307	348	304	307	376	362	376	350
Non-Pathogenic Micro-Organisms	26	20	35	27	0	4	37	49
Mycotoxins	88	54	58	113	80	87	94	61
Biotoxins (Other)	52	68	56	21	5	6	15	9
Parasitic Infestations	4	0	4	3	9	3	1	0
Bio-contaminants	0	19	21	33	0	6	8	6
Farming Practices	210	251	168	295	324	327	268	242
Residues of Veterinary Medicinal Products	75	210	116	212	218	144	140	114
Pesticide Residues	114	30	41	72	98	177	106	100
Feed Additives	11	9	8	10	7	4	19	27
TSEs (Transmissible Spongiform Encephalopathies)	10	2	3	1	1	2	3	1
Industrial / Chemical	369	290	332	298	123	128	152	109
Heavy Metals	75	74	64	73	39	42	46	43
Migration	29	17	8	14	18	16	33	15
Radiation	4	4	8	3	4	0	1	1
Industrial Contaminants	20	28	63	67	1	4	3	2

¹²⁶ FSA (including FSS) breakdown of incidents by category during 2013 to 2014 Reporting Years. From 2015 to 2016-2017 Reporting Years figures include FSA and FSS incidents. From 2017-2018 Reporting Years figures include FSA incident notifications only.

	2013	2014 /15	2015 /16	2016 /17	2017/ 18	2018 /19	2019 /20	2020 /21
Chemical Contamination (Other)	241	167	189	141	61	66	69	48
Other	506	513	757	1168	1408	1400	1527	1152
Allergens	89	140	213	187	260	302	350	187
Adulteration / Fraud	63	62	66	91	18	28	30	12
Labelling Absent / Incomplete / Incorrect	97	69	81	118	160	170	210	155
Genetically Modified Organism / Novel Food	10	9	16	41	64	59	100	54
Food Additives and Flavourings	52	49	35	62	42	43	52	84
Composition	18	46	38	58	100	86	76	89
Foreign Bodies	105	65	97	104	110	104	120	106
Poor or Insufficient Controls	34	25	57	136	287	188	164	91
Organoleptic Aspects	5	9	16	19	5	8	4	0
Packaging Defective / Incorrect	1	5	20	21	10	21	23	6
Environmental Pollutants	n/a ¹²⁷	n/a	n/a	n/a	n/a	n/a	n/a	3
Clandestine Detection	n/a	n/a	n/a	n/a	179	198	193	111
CHEMET	n/a	n/a	n/a	n/a	169	181	203	146
Undefined	n/a	n/a	n/a	n/a	n/a	0	0	6
Not Determined / Other	32	34	118	331	4	12	2	26
COVID-19 Outbreaks ¹²⁸	0	0	0	0	0	0	0	76
Total	1562	1563	1733	2265	2326	2323	2478	1978

¹²⁷ n/a means data is unavailable for a particular year. This is attributed to a review of incident categories. For example 'Water Quality' incident notifications have been refined and categorised as 'Environmental Pollutants'. This categorisation will capture food incidents resulting from flooding and sewage spillage.

¹²⁸ The COVID-19 Outbreak figure reflects the number of notifications logged within the FSA incident management system only. However, we hold additional information on over 200 COVID-19 Outbreaks within a separate record. Other Government Departments and relevant stakeholders also hold additional data on a number of COVID-19 Outbreaks.

This table shows the breakdown of incidents by category reported to the FSA between 2013 and 2021. Overall, there has been a steady increase in incidents with the exception of 2020 to 2021, where a 20% downturn was observed. This downturn is attributed to changes in consumer behaviours, fewer food businesses operating due to the COVID-19 pandemic control procedures and streamlined food production lines. More information on the categories is provided in the appendix.

Figure 5.1.4c: FSS breakdown of incidents by category between 2015 to 2016 and 2020 to 2021

Category	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Allergens	11	8	21	20	18	13
Animal Feed	5	3	7	9	4	4
Chemical	5	1	14	8	10	17
Emergency	4	9	11	6	4	2
Genetically Modified Organism / Novel Food	1	0	0	1	3	5
Illegal Activity	10	5	1	1	3	6
Microbiological	20	23	23	24	27	17
On-farm	12	18	9	6	7	11
Other	3	1	2	3	1	0
Physical	1	1	3	7	7	2
Production Error	3	3	6	7	7	4
Regulatory Breach	11	17	22	17	4	8
Shellfish ¹²⁹	66	15	15	3	3	5
Total	152	104	134	112	98	94

¹²⁹ FSS amended the way Shellfish incidents are recorded from the 2016 to 2017 Reporting Year. Shellfish incidents are now recorded and investigated when harvesting is known to have taken place.

This table shows the number of incidents by category reported to FSS between 2015 and 2021. Overall, there has been a reduction in the number of incidents recorded by FSS since 2015. The main reason for this is a change in how FSS record their incidents, in particular Shellfish incidents. There are several factors explaining why incidents fluctuate from year to year. These include the introduction of new – or changes to – regulations, advancements in technology, science and analytical methods.

Figure 5.1.4d: Total number of food alerts issued by the UK during 2015/16 to 2020/21 Reporting Years

Led by	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
FSA	166	179	140	190	178	141
FSS	12	26	12	17	8	3
Total	178	205	152	207	186	144

In total, the FSA and FSS issued 144 food alerts during the 2020/21 Reporting Year in comparison to 186 alerts issued in the previous Reporting Year. This represents a 23% decrease when compared to 2019/20. This reduction was primarily driven by the fall in Allergy Alerts.

Figure 5.1.4e: Number of Allergy Alerts issued by the UK during 2015/16 to 2020/21 Reporting Years

Led by	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
FSA	84	98	92	118	106	67
FSS	10	6	1	12	4	3
Total	94	104	93	130	110	70

An Allergy Alert (AA) is issued when the product has been, or is being, recalled from consumers because allergen information on food labels is undeclared or incorrect. The FSA and FSS issued a total of 70 Allergy Alerts during the 2020/21 Reporting Year in comparison to 110 Allergy Alerts issued in the previous Reporting Year. This represents a 36% decrease when compared to 2019/20.

Figure 5.1.4f: Number of Product Recall Information Notices (PRINs) issued by the UK during 2015/16 to 2020/21 Reporting Years.

Led by	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
FSA	80	77	46	72	70	73
FSS	1	14	9	5	4	0
Total	81	91	55	77	74	73

A Product Recall Information Notice (PRIN) will be issued when the product has been, or is being, recalled from the final consumer. The FSA and FSS issued a

total of 73 Product Recall Information Notices during 2020/21, much the same as in the previous year (74).

Figure 5.1.4g: Number of Food Alert for Action (FAFA) issued by the UK during 2015/16 to 2020/21 Reporting Years

Led by	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
FSA	2	4	1	1	2	1
FSS	1	6	2	0	0	0
Total	3	10	3	1	2	1

A Food Alert for Action (FAFA) is issued when intervention by enforcement authorities is required. These notices and alerts are often issued in conjunction with a product withdrawal or recall. While the number of recall notices issued has remained stable, very few FAFAs have been issued.

Trends

The number of incidents recorded in any given year can be affected by many factors including new consumer trends, legislative changes, technological and scientific developments, the amount of testing performed, and even the weather. There is a steady year on year increase in incidents from 2013 onwards with the exception of 2020/21 where there was a 20% downturn caused by the pandemic driving changes in consumer behaviour; the streamlining of food production lines; fewer food businesses operating and a reduction in the complexity of the product ranges on offer. The number of incidents reported has now increased following the easing of the national lockdown and is returning to near pre-pandemic levels.

The FSA and FSS highlighted the benefits of Root Cause Analysis (RCA) in food, feed, and outbreak investigations in communications to the enforcement community, and have since committed to the use of RCA as a mechanism for working with industry to prevent incidents.

Between 2015 and 2017, FSS saw an increase in relation to their on-farm incidents. As a result, FSS carried out an incident prevention initiative which involved working with partners to produce a leaflet providing guidance on how farmers could help avoid on-farm incidents. This initiative started at the beginning of 2017 and has helped to reduce the number of on-farm incidents in this category.

There was a rise in the detection of allergen incidents resulting from incorrectly labelled packaging after the implementation of the new Food Information for Consumers Regulation (FICR) in 2014, though changes in dietary trends and international supply chains may also be partially attributable to the observed increases.

Between June 2016 and June 2021, the FSA was notified of 11 allergen related deaths and 11 food related allergic reactions. Notifications from members of the public related to allergies and/or intolerances are referred to the local enforcing authority in the first instance. During the same period, FSS were notified of seven food related allergic reactions.

The reduction of AAs issued in recent years may be partially attributed to:

- High-profile cases resulting in heightened media coverage, leading to greater emphasis on allergen control by food business operators
- Increased allergen awareness campaigns, including by the FSA and FSS
- Impact of Food Information to Consumers Regulation, resulting in greater awareness and allergen risk assessments by food business operators.

Almost all the incidents in the 'Industrial/Chemical' group related to fires which resulted in some potential chemical contamination incident. From 2017/18 Reporting Year onwards, a dedicated CHEMET (Chemical Meteorology) category was introduced for such incidents.

Additionally, each year the FSA runs a Coordinated Food Standards Sampling Programme. This sets different priorities for enforcement authority risk-based sampling and surveillance. The levels of investigation may influence the numbers and types of incidents identified. FSS co-ordinates its own Local Authority Sampling Grants Programme which is designed to take account of UK food standards priorities in addition to areas of particular interest to Scotland.

Finally, during the COVID-19 pandemic, data indicates a downturn of 20% and 4% in the number of incident notifications received by the FSA and FSS respectively. This may reflect fewer food businesses trading over the pandemic and fewer new products coming to the market, as well as a reduction in the complexity of the product ranges offered during this period, and a reduction in local authority inspections. The number of incidents being reported has increased as the national lockdown eased and has now returned to normal level.

Case Study 5.3 Product recalls instigated by malicious tampering with retail consumer products

Overview

In 2019, the FSA and FSS worked with UK law enforcement agencies and Public Health England (PHE) in response to an attempt to blackmail a high-profile

supermarket company based in the UK. Prompt responsive action to the threat, including notification to the public by both the FSA and FSS, saw the supermarket company voluntarily recall 182,000 jars of baby food. Direct harm to consumers was avoided, and the impact on wider consumer confidence in the food supply chain was estimated to be at a low level.

Background

The FSA was initially notified by UK law enforcement agencies in October 2019 that a blackmail demand had been received by a supermarket company, threatening the contamination of baby food products from a food producer ('Company 1'), and that the matter was under investigation with those agencies. Subsequently, the FSA and FSS were notified by UK law enforcement agencies in December 2019 that a complaint had been received by the supermarket company of sharp pieces of metal having been discovered in a jar of baby food purchased in a store in Scotland by a consumer, while feeding their baby. Another jar of contaminated baby food was reported to the police having been purchased from a store in the North West of England.

In light of the first discovered tampered product, a voluntary product recall of 8 varieties within the specific baby food range sold by the supermarket company was undertaken as a precautionary measure following close co-operation and discussion between the companies and agencies. A Product Recall Information Notice to the public to highlight the recall was undertaken by both the FSA and FSS.

A further threat was received by the retailer in January 2020 in relation to jars of baby food produced by a second food company ('Company 2'). Neither the retailer nor producer had received complaints, and the threat did not specify locations or product lines. A voluntary recall of 15 varieties within the baby food range was again undertaken as a precautionary measure and the FSA and FSS issued a Product Recall Information Notice to the public to highlight the recall.

Following a successful investigation and prosecution by co-operating UK law enforcement agencies, in what became the UK's largest ever blackmail investigation, the offender was convicted of offences related to this incident as well as other offences. In October 2020, the offender received a sentence of 14 years in prison, including an 11-year sentence in relation to this incident. There are no known cases of injury associated with the incident.

Discussion

The Food Law Code of Practice issued by both FSS and the FSA to competent authorities responsible for the delivery of official food controls and other official activities defines 'malicious tampering' as the deliberate contamination of food by

terrorist activity, or with a view to blackmail or extortion. Arrangements for dealing with malicious tampering incidents have been established between the FSA, FSS, and appropriate law enforcement agencies throughout the UK.

If there is a suspected or confirmed safety or quality problem with a food product that means it should not be sold, then it can be 'withdrawn' (taken off the shelves before the product reaches the consumer) and/or 'recalled' (when customers are asked to return the product). The FSA and FSS issue Product Recall Information Notices to let consumers and other stakeholders know about hazards associated with food and/or feed. All alerts published by the FSA and FSS are sent to the local authorities and other stakeholder groups to inform them. In some cases, a Food Alert for Action is issued. This provides local authorities with details of specific action to be taken on behalf of consumers.

The potential for criminal behaviour of this nature to affect the health and wellbeing of consumers directly is obvious, and it also presents a serious risk of harm to food businesses such as retailers and the food industry in general through loss of consumer confidence in the security of the food supply chain. In this particular incident, a careful assessment of the risks presented by the threats identified that while the impact for the wider general public might be considered low, it could be high for the individuals that might be affected by products that had been tampered with. This precautionary principle informed the strategies and contingencies which emerged from the close co-operation between the companies and agencies responding to the incident.

In total, the supermarket company voluntarily recalled 42,000 jars of Company 1's baby food and 140,000 jars of Company 2's baby food, which will have had substantial costs for the companies involved. Against those costs, however, the reported level of consumer concern detected following the recalling of the products and the notification of the recalls by the FSA and FSS appears to have been low. The risk of a wider loss of consumer confidence may well have been mitigated by the prompt responsive action taken as well as the successful subsequent prosecution of the offender.

Additionally, the press coverage of the criminal trial identified that the reporting of at least one of the tampered products to the police was prompted by the first product recall and the value of such action might also be seen in that outcome.

Indicator 5.1.5 Prevalence of foodborne pathogens

Headline

During the period 2015 to 2020, *Campylobacter* continued to be the most frequently reported bacterial pathogen causing infectious gastrointestinal disease in the UK. *Campylobacter* reporting showed a marginal overall increasing trend from 2015 to 2019, while *Salmonella* case reporting remained relatively stable. A decreasing trend in reports of Shiga toxin-producing *E. coli* (STEC) O157 has been observed since 2016 and, although reported case numbers are low, reports of *Listeria monocytogenes* infection have also declined marginally since 2016. The COVID-19 pandemic had variable impacts on the reporting of case numbers of these four bacterial pathogens in 2020.

Context and Rationale

The UKHSA, PHW, PHS and PHA are responsible for the surveillance of infectious diseases, including gastrointestinal pathogens that cause foodborne disease. Laboratory testing data and epidemiological information on each reported case is recorded in national surveillance databases and case management systems. The aim is to monitor trends in reporting of gastrointestinal pathogens, changes in disease epidemiology and to detect new and/or emerging disease threats, including foodborne disease outbreaks, so that timely and appropriate action to protect public health can be taken.

For overall food security in the UK it is important that the food consumed is safe to eat and does not constitute a threat to consumers' health. While not all gastrointestinal infections caused by organisms such as bacteria, viruses or protozoa are foodborne, food is an important vehicle of transmission for many gastrointestinal pathogens that cause a substantial public health burden.¹³⁰ Food poisoning leading to diarrhoea and vomiting as well as other more serious health problems, such as haemolytic uraemic syndrome (HUS).¹³¹ Guillain-Barré

¹³⁰ World Health Organisation, 'Estimates of the global burden of foodborne diseases' (2015),

¹³¹ Byrne, L., and others, 'The epidemiology, microbiology and clinical impact of Shiga toxin-producing *Escherichia coli* in England, 2009-2012', *Epidemiology and Infection*, 143(16) (2015), pages 3475 to 3487.

syndrome, irritable bowel syndrome),¹³² and reactive arthritis,¹³³ can result in significant negative impacts on both individuals and society as a whole. Published estimates suggest that around one in four people in the UK suffers an episode of infectious gastrointestinal disease each year and foodborne disease in England and Wales results in costs of around £9.1 billion per year to the NHS, the economy and individuals).¹³⁴

There are many gastrointestinal pathogens and microbial contaminants that have a food safety impact. However, four major bacterial pathogens are considered priority pathogens for national surveillance due to the substantial implications for food safety in the UK: *Campylobacter*, non-typhoidal *Salmonella*, STEC O157, and *L. monocytogenes*. This indicator focusses on these pathogens. *Campylobacter* causes a high disease burden because of the considerable numbers of cases reported at a population level each year. *Salmonella* causes the second highest burden in terms of reported numbers of disease cases, with the highest reporting rate seen in children under the age of 10; a population group which is at higher risk of more severe clinical disease. STEC O157 causes gastrointestinal disease with potentially severe complications, especially in children under the age of 5, such as development of HUS.¹³⁵ Listeriosis can have severe health consequences in people who are immunosuppressed or have underlying health conditions, people over the age of 60, pregnant women and new-born babies (typically through infection during pregnancy). Although annual reports of cases of *L. monocytogenes* are relatively small compared to other foodborne pathogens, listeriosis has a high mortality rate (20% to 30%).¹³⁶

No disease surveillance system is perfect and there are both surveillance biases and under-ascertainment of infectious gastrointestinal disease, further information

¹³² McCarthy, N. and J. Giesecke, 'Incidence of Guillain-Barre syndrome following infection with *Campylobacter jejuni*', *American Journal of Epidemiology* 153(6) (2001), pages 610 to 614; Neal, K.R., L. Barker, and R.C. Spiller, 'Prognosis in post-infective irritable bowel syndrome: a six year follow up study', *Gut* 51(3) (2002), pages 410 to 413.

¹³³ Dworkin, M.S., and others, 'Reactive arthritis and Reiter's syndrome following an outbreak of gastroenteritis caused by *Salmonella enteritidis*' *Clinical Infectious Diseases* 33(7) (2001), pages 1010 to 1014.

¹³⁴ FSA, 'The second study of infectious intestinal disease in the community (IID2 Study)', (2016), <https://www.food.gov.uk/research/research-projects/the-second-study-of-infectious-intestinal-disease-in-the-community-iid2-study>; FSA, 'The Burden of Foodborne Disease in the UK 2018', 2020, <https://www.food.gov.uk/research/research-projects/the-burden-of-foodborne-disease-in-the-uk-2018>.

¹³⁵ Adams, N. and others, 'Sociodemographic and clinical factors for paediatric typical haemolytic uraemic syndrome: retrospective cohort study', *British Medical Journal Paediatrics Open* 3 (1) (2019).

¹³⁶ PHE, 'Listeriosis in England and Wales' (2021), <https://www.gov.uk/government/publications/listeria-monocytogenes-surveillance-reports/listeriosis-in-england-and-wales-summary-for-2018>; Scobie, A. and others, 'Mortality risk factors for listeriosis - a 10 year review of non-pregnancy associated cases in England 2006-2015', *Journal of Infection* 78 (3) (2019), pages 208 to 214.

on which is included in the annex to this report.¹³⁷ Additionally, it is important to note that the surveillance indicators for 2020 were adversely impacted by the COVID-19 pandemic so the 2020 surveillance data cannot be compared to the data from previous years.

Data and assessment

Indicator: Reported infections of *Campylobacter*, non-typhoidal *Salmonella* species (sp.), STEC O157 and *Listeria monocytogenes* in the United Kingdom, 2015 to 2020

Source: Second Generation Surveillance system (SGSS) and Electronic Communication of Surveillance in Scotland (ECOSS).

Figure 5.1.5a: Number of laboratory-confirmed reported infections in the United Kingdom¹³⁸, 2015 to 2020

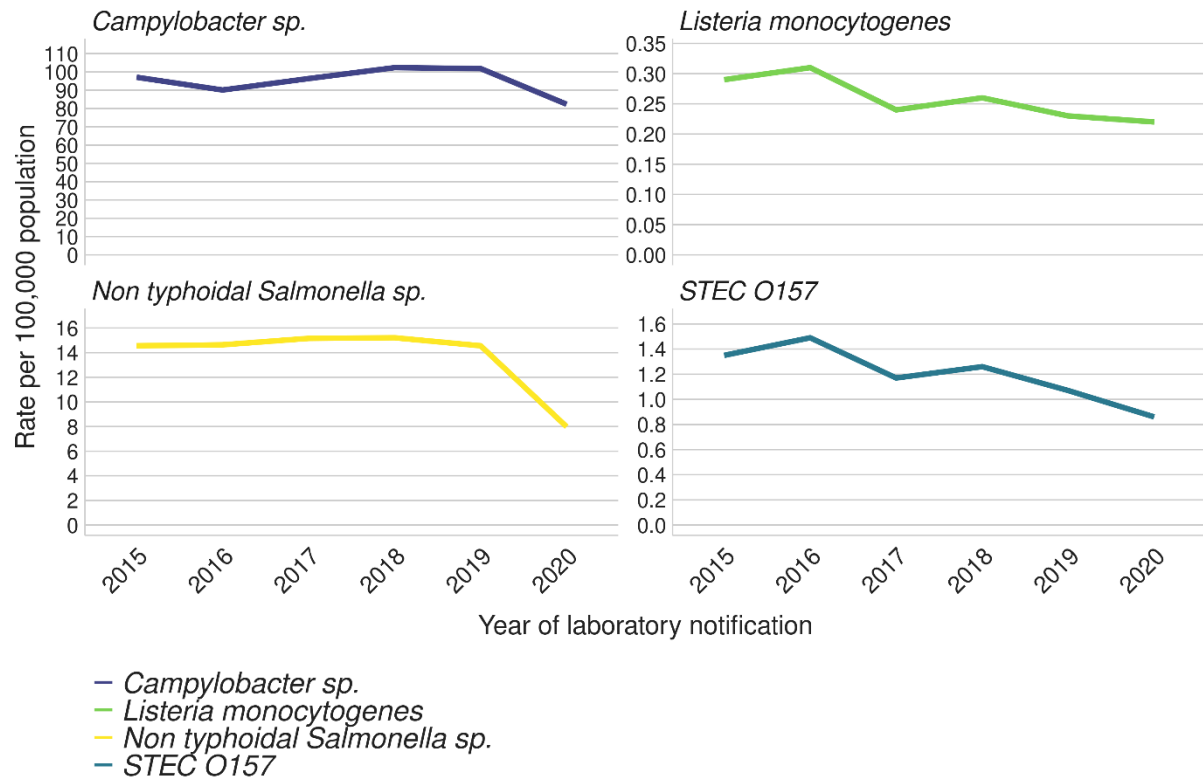
Year	<i>Campylobacter</i> sp.	Non-typhoidal <i>Salmonella</i> sp.	STEC O157	<i>Listeria monocytogenes</i>
2015	63,193	9,479	880	186
2016	58,149	9,610	981	201
2017	63,623	10,010	773	156
2018	67,984	10,107	836	174
2019	68,006	9,724	717	154
2020	54,979	5,329	577	148

Figure 5.1.5b: Rate of reported *Campylobacter* sp., non-typhoidal *Salmonella* sp., STEC O157 and *Listeria monocytogenes* infections per 100,000 population per year in the United Kingdom, 2015 to 2020

¹³⁷ FSA, 'The second study of infectious intestinal disease in the community (IID2 Study)' (2016), <https://www.food.gov.uk/research/research-projects/the-second-study-of-infectious-intestinal-disease-in-the-community-iid2-study>.

¹³⁸ Scottish data include serum positive cases and cases that were polymerase chain reaction (PCR) test positive but bacterial culture test negative (pcr+/culture neg). Northern Irish totals for 2019 and 2020 are provisional.

Figure 5.1.5b: Rate of reported *Campylobacter* sp., non-typhoidal *Salmonella* sp., STEC O157 and *Listeria monocytogenes* infections per 100,000 population per year in the United Kingdom, 2015 to 2020



The pathogen with the highest number of reported cases annually across all years from 2015 to 2020 was *Campylobacter*. Case reporting is particularly high in the summer months, with annual peaks usually seen across the months June to August.

Non-typhoidal *Salmonella* was the second most commonly reported pathogen. Peak reporting is usually during the late summer and autumn months.

STEC O157 and *L. monocytogenes* had lower numbers of cases reported, with reporting rate peaks in 2016 of 1.49 cases per 100,000 population for STEC O157 and 0.31 cases per 100,000 population for *L. monocytogenes*.

As illustrated by figure 5.1.5b, the impact of the COVID-19 pandemic on gastrointestinal pathogen reporting rates varied by pathogen. In 2020, there were 5,329 reported salmonellosis cases, a reduction of 45% compared to 2019. *Campylobacter* reporting appeared to be less impacted by the pandemic. Initially there was a substantial reduction in *Campylobacter* reports in April 2020 (between 19% to 33% reduction) but reports had increased to similar levels to those recorded before the COVID-19 pandemic by August 2020 (1% to 7% reduction) and this return to reporting levels seen in previous years was sustained

throughout the remainder of 2020 (data not shown) with an overall reduction in reports in 2020 compared to 2019 of 19%.¹³⁹ The number of reported cases of STEC O157 fell from an average of 837 cases between 2015 and 2019 to 577 cases in 2020 (overall reduction of 31%). Like *Campylobacter*, there were fewer than expected STEC O157 cases from April 2020 but with levels rising to numbers comparable to the five-year average by August 2020 (data not shown). The reporting rate of *L. monocytogenes* decreased marginally in 2020 (148 cases compared to an average of approximately 170 cases reported in the previous five years, a decrease of 13%).

Trends

After an initial decline in reporting rate between 2015 to 2016, the reporting rate for *Campylobacter* increased from 2017 and reached a peak of 102.33 cases per 100,000 population in 2018. Overall, there has been a marginal but sustained upward trend in *Campylobacter* reports seen over the last decade.

The decreasing trend seen at the start of the decade in reports of *Salmonella* was not sustained in recent years, but case reporting remained lower than pre-2010 levels and relatively stable at approximately 10,000 reports each year until 2020, peaking in 2018 with a reporting rate of 15.21 per 100,000 population.¹⁴⁰

Reported cases of STEC O157 have shown an overall decreasing trend since 2016. The reason for this decline is unclear, although phage typing indicates a decrease in numbers of one of the most frequently detected types (PT 21/28) (data not shown). In contrast, the number of cases infected with other STEC serogroups (called non-O157 STEC), in particular STEC O26, has been increasing over the last decade (data not shown), likely predominantly due to the increasing number of laboratories implementing enhanced testing methods which enable the detection of all STEC and not just STEC O157.¹⁴¹ However, a real increase in the number of gastrointestinal infections caused by non-O157 STEC cannot be ruled out and the UK public health agencies are assessing these changes in trends.

¹³⁹ Ondrikova, N. and others, 'Differential impact of the COVID-19 pandemic on laboratory reporting of norovirus and *Campylobacter* in England: A modelling approach', *PLOS One* 16 (8) (2021).

¹⁴⁰ Lane, C. R. and others, 'Salmonella enterica serovar Enteritidis, England and Wales, 1945-2011', *Emerging infectious diseases*, 20(7), pages 1097 to 1104.

¹⁴¹ Vishram, B. and others, 'The emerging importance of Shiga toxin-producing *Escherichia coli* other than serogroup O157 in England', *Journal of Medical Microbiology* 70 (7) (2021).

Low numbers of reported cases complicate interpretation of trends for *L. monocytogenes* infection. However, the number of reported cases in the UK has declined marginally from 2016 to 2020, following a small increase in 2016.

The 2020 surveillance data indicators 5.1.5a and 5.1.5b cannot be compared to the data from previous years, as an overall substantial and sustained reduction in reporting of gastrointestinal pathogens to national surveillance has been observed coinciding with the COVID-19 pandemic. This may be due to the effects of lockdowns and restrictions on peoples' behaviours, making them less at risk of acquiring certain infections. Examples could include changes in eating out patterns and changes in travel patterns. However, changes in health care seeking behaviours are also likely to have contributed, with fewer people visiting general practitioners and hospitals and having samples taken for testing, as well as changes in laboratory testing practices. Therefore, trend analysis should only be considered for 2015 to 2019, with exclusion of 2020 data.

The significantly lower number of *Salmonella* reports in 2020 was likely driven by multiple reasons, but a marked reduction in number of reports of travel-associated cases due to a reduction in foreign travel during the pandemic was likely to have played a notable role. Travel-associated *Salmonella* in the UK in the pre-pandemic era is estimated to constitute as much as 45% of overall disease burden).¹⁴² Similarly, the reduction in STEC O157 reports reflected a marked reduction in cases reporting foreign travel which normally account for approximately 20% of cases.¹⁴³

The less notable reduction in reports of *L. monocytogenes* throughout 2020 may be due to the fact that reported cases of *Listeria* are typically very unwell and often require hospitalisation, therefore ascertainment is less impacted by a decrease in people visiting their general practitioners and other healthcare settings.

¹⁴² Zenner, D. and I. Gillespie, 'Travel-associated Salmonella and Campylobacter gastroenteritis in England: estimation of under-ascertainment through national laboratory surveillance', *Journal of Travel Medicine* 18 (6) (2011); PHE, 'Travel-associated non typhoidal Salmonella infection in England, Wales and Northern Ireland: 2014' (2017).

¹⁴³ Byrne, L. and others, 'The epidemiology, microbiology and clinical impact of Shiga toxin-producing *Escherichia coli* in England, 2009-2012', *Epidemiology and Infection*, 143(16) (2015), pages 3475 to 3487.

Indicator 5.1.6 Foodborne disease outbreak surveillance

Headline

In total, the UK public health agencies, together with partner organisations, investigated and reported 276 foodborne disease outbreaks during 2015 to 2020, with nearly 10,000 associated human disease cases. The proportional trends in causative pathogens, hospitalisation rates, associated foods implicated in the outbreak investigations and outbreak settings remained relatively stable over the period 2015 to 2019 and generally consistent with that seen in previous years. However, the implementation of whole genome sequencing since 2015 and the COVID-19 pandemic in 2020 have impacted on this data indicator.

Context and Rationale

The UKHSA, PHW, PHS, and the PHA are the lead organisations responsible for the detection, investigation and management of outbreaks of foodborne disease in the UK, working in partnership with food safety, animal health and local authority colleagues for the implementation of food safety controls (see appendix for further detail).

There are inherent biases which should be considered when assessing the data presented in this indicator. The data derived through systematic national surveillance of foodborne disease outbreaks nonetheless provides an important source of information for foodborne disease trend analysis. This data is used alongside other surveillance indicators for foodborne gastrointestinal pathogens to inform risk assessment and policy development for the protection of UK consumers against risks posed by foodborne disease.

An 'outbreak' is defined as an incidence of two or more human cases of the same disease, linked to the same source. Specifically for foodborne outbreaks, the definition usually applied is 'an incidence, observed under given circumstances, of two or more human cases of the same disease and/or infection, or a situation in which the observed number of human cases exceeds the expected number and

where the cases are linked, or are probably linked, to the same food source (including potable water)' (Directive 2003/99/EC).¹⁴⁴

Public Health Agencies in the UK now routinely perform whole genome sequencing (WGS) for genomic characterisation of several bacterial gastrointestinal pathogens, including *Salmonella* sp., *Listeria monocytogenes*, *Shigella* sp., *Yersinia* sp. and shigatoxin producing *E. coli* (STEC). The data derived from the systematic national surveillance of foodborne disease outbreaks pre and post the implementation of WGS is not directly comparable.

Data and assessment

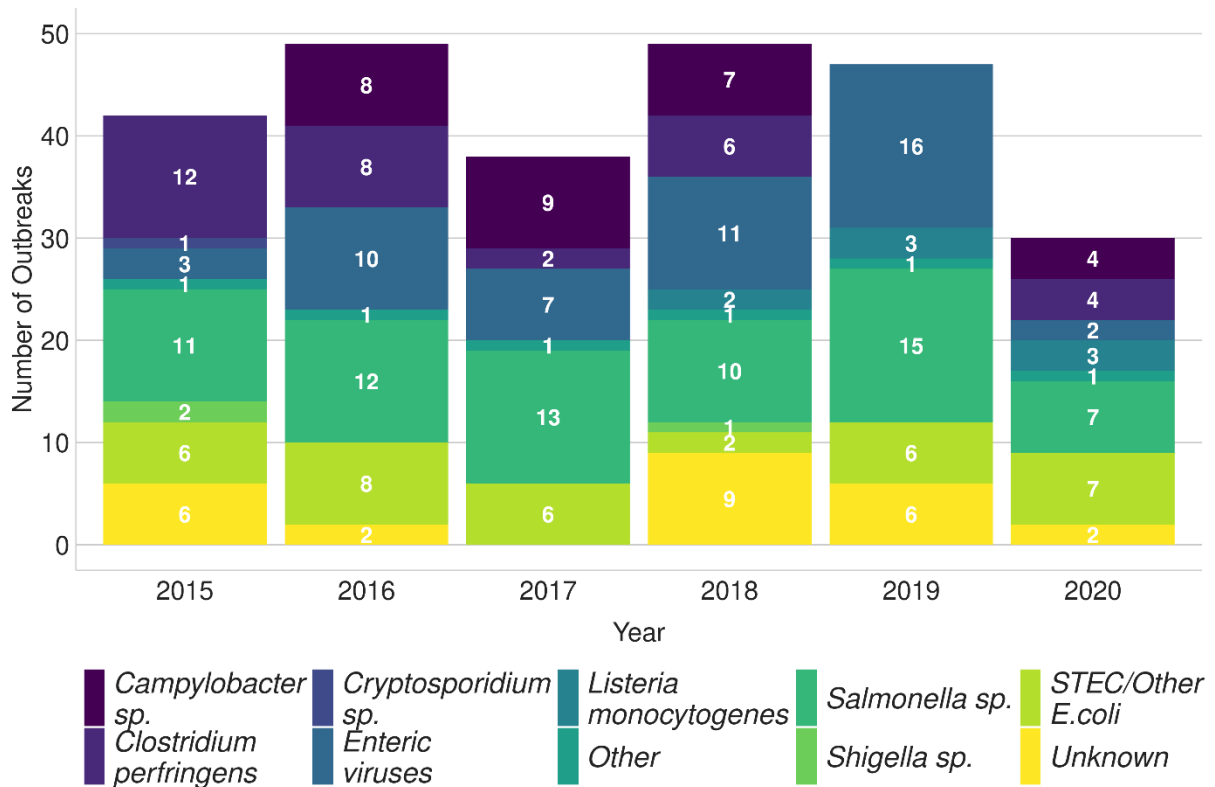
Indicators:

- Number of foodborne outbreaks investigated and reported in the UK and associated number of human cases and hospitalisations 2015 to 2020
- Foodborne disease causative agents and food vehicles implicated in the foodborne outbreaks investigated and reported from 2015 to 2020 and outbreak settings

Source: Electronic Foodborne and non-foodborne outbreak surveillance system (eFOSS) in England and Wales, ObSurv in Scotland and the outbreak surveillance dataset in Northern Ireland

¹⁴⁴ European Union and Council, 'Directive 2003/99 EC of the European Parliament and of the Council of 17 November 2003 on the monitoring of zoonoses and zoonotic agents, Official Journal 325 (

Figure 5.1.6a: Number of foodborne outbreaks by causative agent investigated and reported to national public health surveillance in the UK, 2015 to 2020



Of the 276 outbreaks reported, 251 outbreaks were investigated where a causative agent was identified between 2015 and 2020. *Salmonella* sp. was the most frequently reported in most years (68 out of 251 outbreaks in total, 27%), with enteric viruses second (49 outbreaks, 20%), followed by *Campylobacter* (42 outbreaks, 17%) and *Clostridium perfringens* (39 outbreaks, 16%). There were between 2 and 8 outbreaks of STEC reported each year during this time period. There were no outbreaks of *Listeria monocytogenes* reported in 2015 and 2016, but 8 outbreaks in total reported between 2017 and 2020.

Table 5.1.6b. Total number of associated human cases and percentage hospitalised (X%) associated with foodborne outbreaks reported to national public health surveillance by causative pathogen in UK, 2015 to 2020¹⁴⁵

Causative agent	2015	2016	2017	2018	2019	2020	Total
<i>Salmonella</i> sp.	274 (4%)	540 (4%)	688 (11%)	673 (5%)	549 (7%)	732 (7%)	3,456 (7%)
Enteric viruses ¹⁴⁶	210 (0%)	1,407 (0%)	317 (1%)	370 (0%)	476 (1%)	180 (0%)	2,960 (0%)
<i>Campylobacter</i> sp.	190 (2%)	173 (0%)	146 (6%)	140 (4%)	39 (0%)	28 (4%)	716 (3%)
<i>Clostridium perfringens</i>	205 (1%)	163 (2%)	114 (0%)	293 (0%)	141 (0%)	90 (8%)	1,006 (1%)
STEC/Other <i>E. coli</i>	106 (21%)	306 (32%)	48 (25%)	55 (36%)	65 (40%)	93 (32%)	673 (31%)
<i>Listeria monocytogenes</i>	N/a	N/a	N/a	17 (100%)	17 (100%)	9 (100%)	43 (100%)
<i>Shigella</i> sp.	17 (47%)	N/a	N/a	34 (12%)	N/a	N/a	51 (24%)
<i>Cryptosporidium</i> sp.	16 (0%)	N/a	N/a	N/a	N/a	N/a	16 (0%)
Other ¹⁴⁷	2 (0%)	23 (0%)	14 (0%)	5 (60%)	13 (0%)	3 (0%)	60 (5%)
Unknown ¹⁴⁸	177 (0%)	15 (0%)	N/a	119 (1%)	140 (0%)	13 (0%)	464 (0%)
Total	1,197 (4%)	2,627 (5%)	1,327 (7%)	1,706 (5%)	1,440 (6%)	1,148 (9%)	9,445 (6%)

There were 9,445 cases of foodborne illness reported to be associated with the total 276 outbreaks investigated and reported during 2015 to 2020. The majority of cases (3,456 cases, 37%) were associated with *Salmonella* outbreaks and enteric viruses (2,960 cases, 31%). While just under 6% of the total associated outbreak

¹⁴⁵ Hospitalisation data not known for all cases; ascertainment of both cases and hospitalisation varies according to the pathogen, clinical severity and differences in laboratory testing.

¹⁴⁶ Includes foodborne norovirus outbreaks or norovirus outbreaks related to infected food handlers.

¹⁴⁷ 'Other' includes marine biotoxins such as scrombotoxin and okadaic acid as well as other entero-toxin producing bacteria such as *Staphylococcus* or *Bacillus* spp.

¹⁴⁸ 'Unknown' are outbreaks where a causative agent was not identified as the cause of the disease in the outbreak associated human disease cases.

cases between 2015 and 2020 reported hospitalisation, this varied substantially by pathogen from 0% to 100%.

The effect of routine implementation of WGS for surveillance of bacterial gastrointestinal pathogens has been particularly notable for *Salmonella*. The proportion of all *Salmonella* outbreaks detected at the national level has increased since 2015 from 27% to 67% in 2019, with outbreak associated case numbers per outbreak showing an overall increasing trend (see the appendix for further detail).

Table 5.1.6c. Foodborne outbreaks by food vehicle investigated and reported to national public health surveillance per year, 2015 to 2020 in the UK¹⁴⁹

Food vehicle	2015	2016	2017	2018	2019	2020	Total
Poultry meat and poultry meat products	12	7	6	5	4	4	38
Composite or mixed foods	6	6	4	5	11	0	32
Other mixed meat/poultry/products	7	5	2	4	2	1	21
Eggs and egg products	3	5	2	2	6	1	19
Beef/bovine meat and products	3	4	2	4	2	2	17
Crustaceans/shellfish/molluscs	1	1	2	6	3	3	16
Fruits and vegetables	0	3	3	3	0	3	12
Dairy	0	1	3	1	1	4	10
Pork meat and products	3	0	2	2	2	0	9
Lamb meat and products	2	0	1	3	2	0	8
Finfish and products	1	0	0	2	0	1	4
Herbs/spices/cereal products/nuts and seeds	0	0	1	1	1	1	4
Potable water	1	0	0	0	0	0	1
Unknown ¹⁵⁰	14	17	10	11	23	10	85
Total	53	49	38	49	57	30	276

For the 191 outbreaks investigated between 2015 and 2020 with a food vehicle reported as implicated or suspected to be implicated, poultry meat and poultry meat products were most commonly reported as vehicles of infection (38

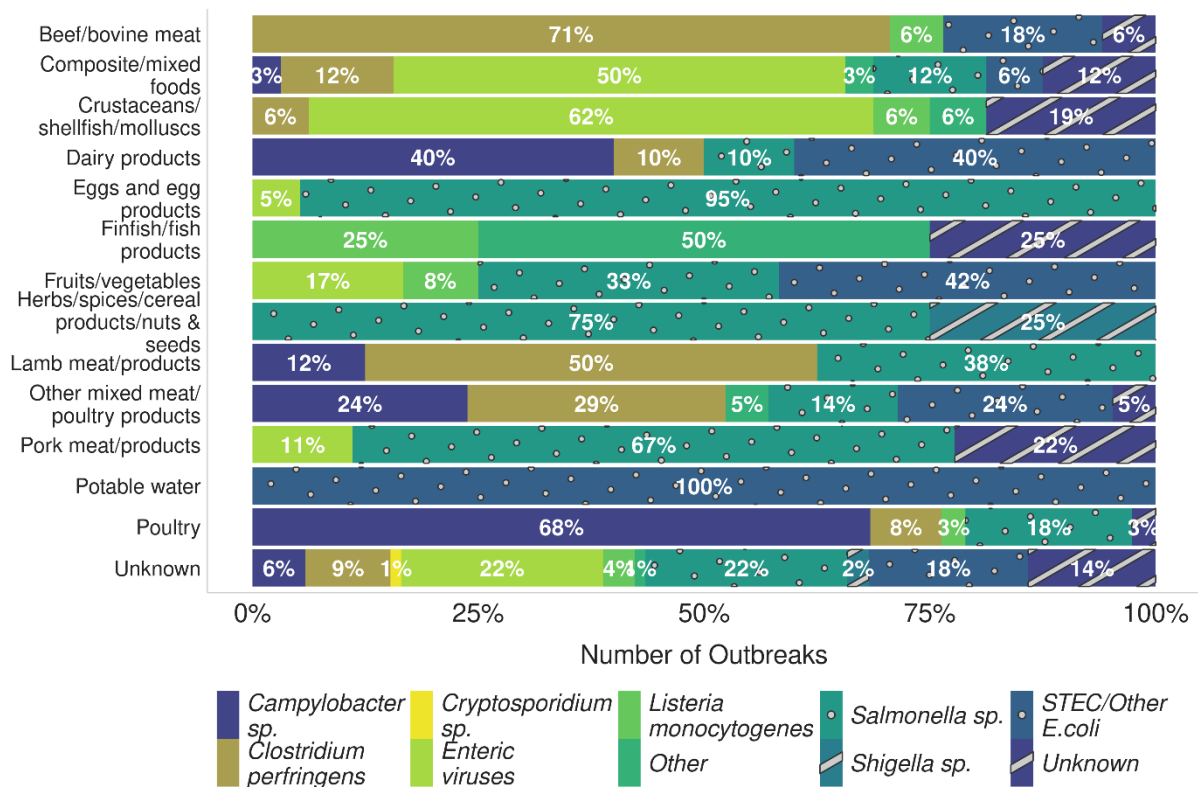
¹⁴⁹ Not all outbreaks are microbiologically linked to the implicated food vehicle.

¹⁵⁰ Epidemiological investigations may not always be able to identify the food causing the outbreak, and food sampling may not always be undertaken. For those outbreaks where a food vehicle could not be identified, these outbreaks are reported as 'unknown food vehicle'.

outbreaks, 20%), followed by composite/mixed foods (32 outbreaks, 17%) and other mixed meat/poultry/products (21 outbreaks, 11%).

The overall number of reported outbreaks in 2020 (30 outbreaks) was lower than any other year (2015 to 2019) and 40% lower than the average for this 2015 to 2019 (49 outbreaks). Although the total number of cases (1,148) in 2020 was lower compared to the five-year (2015 to 2019) average (1,659) the percentage hospitalised (9%) was higher than the five-year average (5%).

Figure 5.1.6d: Foodborne outbreaks by food vehicle investigated and causative agent reported to national public health surveillance, 2015 to 2020 in the UK

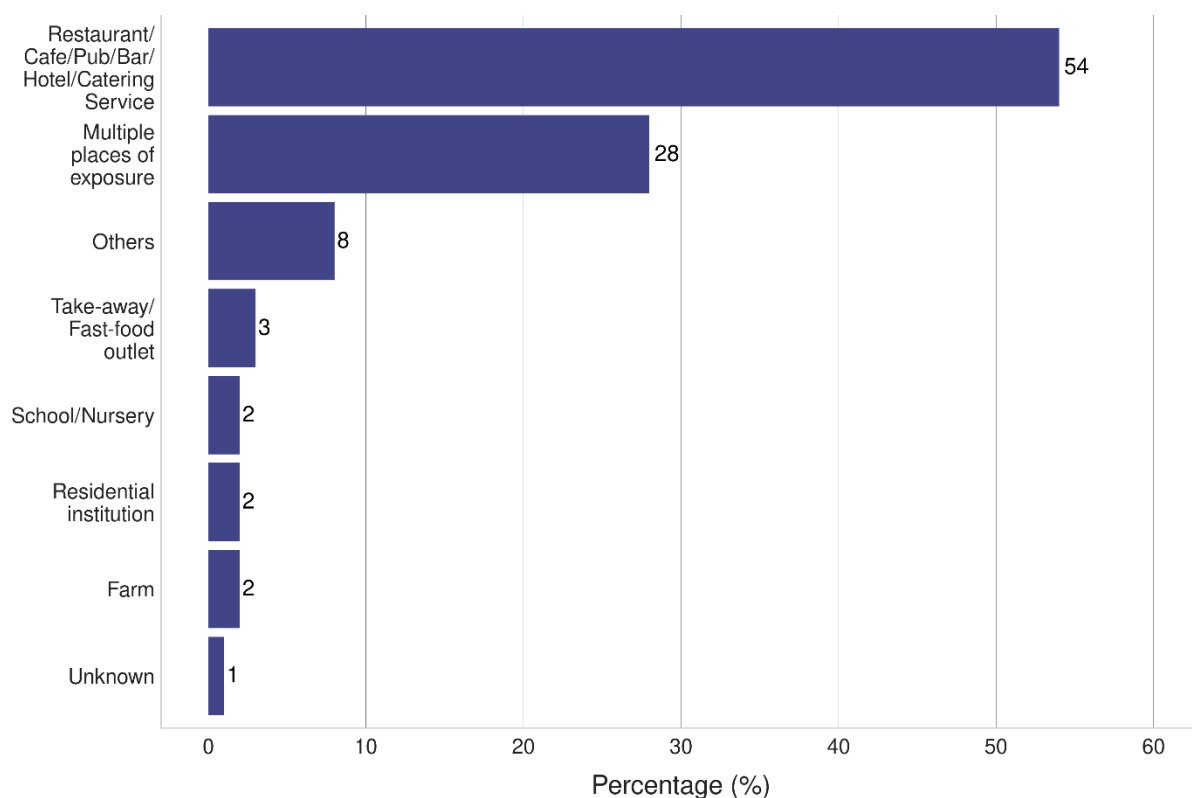


Reported *Campylobacter* outbreaks were predominantly associated with poultry products (implicated as the vehicle in 62% of all reported *Campylobacter* outbreaks with 583 associated outbreak cases), with chicken liver pate/parfait being the most commonly reported vehicle. Eggs and poultry meat products were most commonly implicated in *Salmonella* outbreaks (being the implicated vehicles in 26% and 10% of *Salmonella* outbreaks respectively with a total of 1,089 and 561 associated outbreak cases respectively). Ruminant meat and meat products (lamb and beef) were associated with a total of 28 outbreaks, involving 1,064 associated human cases, nearly half of which (517 cases) were associated with *Salmonella* outbreaks. Beef products were the most commonly reported vehicle in *Clostridium perfringens* outbreaks (implicated as the vehicle in 31% of *C. perfringens* outbreaks with 267 associated outbreak cases). All of the 16 reported

outbreaks associated with crustaceans/shellfish/ molluscs were norovirus outbreaks (involving 587 cases).

Outbreaks associated with fruit and/or vegetables were reported as implicated food vehicles in 14% of outbreaks caused by STEC (with 277 associated foodborne illness cases), in 6% of *Salmonella* outbreaks (186 associated cases), in 4% enteric virus outbreaks (93 cases) and 13% *Listeria monocytogenes* outbreaks (12 cases, associated with one outbreak). Outbreaks with dairy products reported as implicated food vehicles were associated with *Campylobacter* and STEC most frequently. The single outbreak reported during this period associated with potable water was an STEC O157 outbreak linked to a private water supply.

Figure 5.1.6e: Percentage of foodborne outbreaks reported by setting, 2015 to 2020¹⁵¹



¹⁵¹ 'Multiple places of exposure' refers to national outbreaks where nationally distributed food vehicle has been consumed in more than one different setting. 'Others' include settings with less than 3 outbreaks reported including, hospital or medical settings, workplace canteens or other undisclosed settings.

By overall reported number and by number of associated outbreak cases, the majority of outbreak investigations reported between 2015 to 2020 were associated with catering settings (54% with specific restaurants/food service establishments and 3% associated with takeaways or fast-food outlets, together contributing 51% of total associated human disease cases). Only 4% of outbreaks were associated with school or other institutional settings. The largest outbreaks (28% of total number of reported outbreaks but constituting 39% of overall number of reported outbreak associated cases), were designated as multiple places of exposure, when a contaminated food product that caused the outbreak is consumed in the home or at multiple locations, including in institutions and multiple different food service establishments. Outbreaks associated with the farm setting were exclusively outbreaks associated with raw drinking milk, caused by *Campylobacter* or STEC O157. There was a significant reduction in the proportion of outbreaks associated with the food service sector in 2020 (6% versus a range of 39% to 67% in previous years).

Trends

The number of foodborne outbreaks reported each year is small but overall, proportionally, the 2015 to 2019 surveillance data demonstrates trends not significantly dissimilar to previous years' data. Several key aspects were generally consistent with some of the long-term trends observed since systematic national surveillance for foodborne outbreaks was first instituted in 1992.¹⁵² There are some notable exceptions. The overall number of outbreaks reported, especially those due to salmonellosis, has declined to levels significantly lower than in the 1990s and 2000s. For *Salmonella*, this is likely due, at least in part, to the implementation of EU wide controls for *Salmonella* in chickens under Regulation (EC) No 2160/2003¹⁵³. There were also several large *Salmonella* Enteritidis outbreaks reported during 2015 - 2020 associated with imported poultry products (ECDC, 2017; ECDC, 2020; ECDC, 2021).¹⁵⁴ This indicates that *Salmonella*

¹⁵² Gormley, F.J. and others, 'A 17-year review of foodborne outbreaks: describing the continuing decline in England and Wales (1992-2008)', *Epidemiology and Infection* 139 (5) (2011), pages 688 to 699.

¹⁵³ European Parliament and Council, 'Regulation (EC) No 2160/2003 of the European Parliament and of the Council of the 17 November 2003 on the control of salmonella and other specified food-borne zoonotic agents (2003), [REDACTED]

¹⁵⁴ European Centre for Disease Prevention and Control: 'Re-emerging multi-country WGS-defined outbreak of *Salmonella* Enteritidis, MLVA type 2-12-7-3-2 and 2-14-7-3-2 (2017), [REDACTED]

[REDACTED] 'European Food Safety Authority, 2021. Multi-country outbreak of *Salmonella* Enteritidis sequence type (ST)11 infections linked to

contamination of poultry products at the EU level is still an ongoing public health concern. When considering the data for pathogens subject to routine whole genome sequencing (*Salmonella* sp, STEC, *Listeria monocytogenes* and *Shigella* sp), there has been a year-on-year increase in the proportion of reported national level outbreaks ranging from 26% in 2015 to 94% in 2020 and the average size of outbreaks has steadily increased since 2015, particularly notable for *Salmonella*. Although sporadic campylobacteriosis places a significant health burden on the community, the number of outbreaks investigated and reported does not reflect this burden. This is likely because *Campylobacter* outbreaks are difficult to detect through existing surveillance systems.¹⁵⁵

The proportion of outbreaks linked specifically to food service establishments remains significant. Outbreaks associated with these settings are most commonly related to and amplified by poor hygiene controls, environmental contamination and cross-contamination in the kitchen. Therefore, continued efforts to improve hygiene and lower the risk of introducing contaminated products and ingredients into food service establishments are needed in order to realize further public health benefits.

There are some notable differences in the 2020 data compared to the data collected from the previous five years. There was a higher overall hospitalisation rate seen in 2020, potentially indicating that during the pandemic less clinically severe cases may not have been identified and associated with foodborne outbreaks. There was also a reduction in the number of *Salmonella*, *Campylobacter*, norovirus and *Cl. Perfringens* outbreaks, likely associated with the COVID-19 pandemic restrictions on the hospitality and catering sector and a notable reduction overall in outbreaks associated with food service settings (see report annex for further detail).

poultry products in the EU/EEA and the United Kingdom' (2021),

[pdf](#): 'European Food Safety Authority, 2020. Multi-country outbreak of *Salmonella* Enteritidis infections linked to eggs, third update' (2020),

¹⁵⁵ Pebody, R.G., M.J. Ryan and P.G. Wall, 'Outbreaks of campylobacter infection: rare events for a common pathogen', *Communicable Disease Report Review* 7 (1997).

Case Study 5.4 *Listeria* outbreak linked to consumption of pre-prepared hospital sandwiches in England

Overview

Listeriosis is a rare disease in the UK, but its clinical severity renders it a public health concern, particularly in the context of clinically vulnerable groups. Identification of *Listeria monocytogenes* from a patient sample is notifiable in England. Public health investigation and follow-up including completion of a questionnaire on what foods individuals who have been diagnosed with listeriosis have eaten prior to illness onset is attempted for all reported cases of listeriosis as an integral part of the enhanced surveillance system for listeriosis in England.

An outbreak of listeriosis in hospitals in England, which caused nine cases and seven deaths, was identified and investigated between May and July 2019 and confirmed to be linked to consumption of pre-prepared sandwiches served to patients in hospitals across England.

The epidemiological, microbiological and food chain investigations, carried out by the multi-disciplinary Incident Management Team (IMT) identified the cause of the outbreak to be contaminated poultry meat used in the production of sandwiches. This was exacerbated by inadequate food safety protocols in hospital catering facilities. Whole genome sequencing confirmed that isolates from all nine cases were closely genetically related and isolates sampled from chicken and other sandwich ingredients had indistinguishable genetic profiles, providing microbiological evidence of the common source of foodborne transmission.

Background

In May 2019, the UKHSA (formerly Public Health England) notified partner agencies of an outbreak detected using analysis of whole genome sequencing data after two patients, with pre-existing medical conditions, contracted listeriosis in the same hospital. Both had overlapping hospital admission dates and had consumed sandwiches whilst in hospital. Between May and June 2019, 9 confirmed cases of listeriosis associated with the outbreak were identified in England in 8 hospitals across 7 NHS Trusts. By the time the outbreak was declared over, 7 patients had died.

An IMT was convened by UKHSA, involving colleagues from UKHSA, local authorities, the FSA and FSS, Public Health Scotland (formerly Health Protection Scotland), Public Health Wales, NHS England, and NHS Scotland.

The individuals diagnosed with listeriosis were interviewed (or family members, where direct interview of the confirmed cases was not possible) to ascertain what foods they had eaten prior to becoming ill and inspection of hospital catering records where available, was carried out as part of the food tracing investigations. This identified that the first three cases had all consumed chicken sandwiches, which the FSA identified to be sourced from a common supplier, which supplied sandwiches to NHS hospitals across Great Britain and were manufactured by one specific business.

In turn, the contamination was traced back to diced chicken which tested positive for *L. monocytogenes* at high levels and whole genome sequencing confirmed that it matched the outbreak strain identified from the cases. Not all cases consumed sandwiches made with the chicken, and some other sandwiches from the same producer were consumed, suggesting that both cross-contamination within the manufacturing environment and a lack of food safety controls in place at the hospitals had contributed to the outbreak.¹⁵⁶

Discussion

The outbreak posed food safety and public health concerns for vulnerable consumers and patients attending hospitals, and attracted prolonged media and public interest. This risked loss of confidence in hospital food, and particularly sandwiches served in hospital, with pre-prepared sandwiches having been commonly associated with outbreaks of listeriosis in the UK in previous years.

The FSA has a key role as the Central Competent Authority (CCA) in overseeing official food safety controls undertaken by Local Authority (LA) food law enforcement authorities in England, Wales, and Northern Ireland. It is important to understand that, in most cases, enforcement of food law is a direct statutory duty of the competent authority (in this case, the LA).

Following the outbreak, a full cross-government strategic lessons learned exercise was undertaken to identify best practice in the supply chain for NHS food. This also focused on the actions required to prevent future recurrence. The FSA and FSS contributed to a 'root and branch' review commissioned by the Secretary of

¹⁵⁶ PHE, 'Investigation into an outbreak of *Listeria Monocytogenes* infections associated with hospital-provided pre-prepared sandwiches, UK May to July' (2019) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/937907/2019-05-Listeria-CC8-Outbreak-Report.pdf.

State for Health and Social Care. The subsequent Report of the Independent Review of NHS Food made 8 recommendations for system-level changes to be taken forward by an expert group with representation drawn from across the sector and government.¹⁵⁷ Both the evidence obtained during this specific outbreak and provided by the FSA and FSS contributed to the report which was later published on the FSA's website.

In summary, this outbreak of listeriosis led to a thorough investigation of *what happened* and *why*. To help avoid repetition of the incident, the report recommended that NHS purchasers must have effective mechanisms in place to assure food safety within their supplier base and drive improvements where necessary to ensure all businesses supplying high-risk foods meet the highest standards.

The report recommended that the standards of food-safety audits for high-risk food manufacturers be raised, to give confidence that legal and contractual requirements were being met. It was noted that most NHS trusts used a private company to accredit food suppliers as safe, but they must be aware that third-party accreditation was not a guarantee that a product was safe.

The report also recommended that NHS trusts must recognise their legal obligations as food business operators and ensure effective compliance with robust food safety procedures is achieved across their supply base. These procedures must be clearly understood, properly implemented, and verified to ensure compliance.

Indicator 5.1.7 Food Crime

Headline

Recorded disruptions from the FSA's NFCU and successful operations by the SFCIU help to quantify the successful delivery of activity to stop or reduce the opportunity for food crime offending within the UK food chain. The NFCU began recording food crime disruptions in 2020 to 2021, with a steady increase in the number of disruptions recorded through the year. Increases can be attributed to improvements in operational capability and a greater focus on, and awareness of, the full scope of disruption strategies. While still in an early phase, food crime interventions are an important indicator for the security of UK food, demonstrating

¹⁵⁷ DHSC, 'Report of the Independent Review of NHS Hospital Food' (2020), <https://www.gov.uk/government/publications/independent-review-of-nhs-hospital-food>.

the UK food safety authorities' ability to receive, assess, and respond to intelligence concerning food crime.

Context and Rationale

Following the horsemeat incident in 2013 that affected consumers in the UK and Europe, government-commissioned reviews recommended the establishment of food crime units to prevent further food crime incidents. As a result, the FSA set up its NFCU, operating in England, Wales, and Northern Ireland, and FSS created the SFCIU.

The Units define food crime as serious fraud and related criminality in food supply chains.¹⁵⁸ Most food crime relates to two broad classes of activity:

- The deliberate inclusion of lower-grade, unsafe or alternative ingredients as edible and marketable.
- The sale of passable food, drink, or feed as a product with greater volume or more desirable attributes.

In many cases, consumers will be unable to identify they have been victims of fraud. However, in some instances, especially when ingredients are misrepresented, they can have significant impacts. These can come from individuals consuming products they avoid due to dietary requirements, religious or cultural observances, and/or allergies which can lead to serious physical harm, or even death. By tracking food crime interventions, it is possible to better articulate where food crime incidents have manifested (and have required some form of response).

The NFCU and SFCIU both follow similar investigative and disruption strategies, 4P and 4D, respectively as detailed below:

¹⁵⁸ FSS, 'Food Crime Strategic Assessment' (2020), <https://www.foodstandards.gov.scot/publications-and-research/publications/food-crime-strategic-assessment-2020>.

NFCU 4P Approach (taken from the Home Office’s Serious and Organised Crime Strategy)¹⁵⁹			
Pursue	Prepare	Protect	Prevent
Deal with offenders through prosecution and disruption	Build capacity and capability to identify and mitigate the impact of food crime	Protect industry and the public from the effects of food crime	Prevent people from committing food crime
SFCIU 4D Approach (taken from the Scottish Government’s Serious Organised Crime Strategy)¹⁶⁰			
Disrupt	Detect	Deter	Divert
Target those committing food crime and related fraudulent activity and identify opportunities to take enforcement action	Identify those involved in food crime and related fraudulent activity using all power available to the organisation, local authorities and partner agencies	To deter individuals involved in food crime and related fraudulent activity through intelligence gathering, investigation, regulatory compliance and surveillance of the supply chain	To divert people from becoming involved in food crime and related fraudulent activity

The NFCU record operational outcomes across the 4P approach as disruptions. These are achieved where the NFCU leads or supports action in response to a food crime threat which has a measurable impact. It is a measure of impact, not the activity or effort to achieve it.

The way this data is recorded and reported may change in coming years, so this indicator might be subject to change in future iterations to reflect these developments.

¹⁵⁹ Home Office, ‘Serious and Organised Crime Strategy’ (2018), <https://www.gov.uk/government/publications/serious-and-organised-crime-strategy-2018>.

¹⁶⁰ Scottish Government, ‘Serious and Organised Crime Strategy (2015), <https://www.gov.scot/publications/scotlands-serious-organised-crime-strategy/documents/>.

Data and assessment

Indicator: Total number of disruptions recorded by FSA

Source: NFCU

Figure 5.1.7a: Number of disruptions recorded in 2020 to 2021

During 2020/21 there were **190** disruptions, of which the FSA:



Led **45**



Supported or coordinated **145**

During 2020 to 2021, the number of disruptions recorded each quarter by the NFCU increased steadily across the year, with 52 Pursue disruptions and 138 Prepare, Prevent or Protect disruptions being delivered overall. This was driven by the NFCU achieving full operating capability, applying greater focus to prepare, prevent, and protect outcomes, and increasing awareness amongst staff with regards to identifying and recording disruptions resulting from their work.

SFCIU was involved in a significant number of investigations during 2020 to 2021 which had various intervention and disruption strands. As part of developing a disruption activity indicator SFCIU are developing an approach to capture the percentage of actionable intelligence that has resulted in a positive outcome.

Trends

Due to limited time series data it is not possible to provide an assessment of the trends, however this will be possible in coming years.

Case Study 5.5 Unlawful processing in the red meat sector

Overview

NFCU worked in partnership with other agencies and authorities to tackle a case of unlawful processing in the red meat sector. This led to the seizure of 5.3 tonnes of meat, which had been prepared in unsanitary conditions and was being sold to consumers online. This case also started the process of considering further policy development in the online food sales space.

Background

Unlawful processing in unregulated premises can lead to unsafe product being placed in the human food chain posing a risk to human health. In addition, this sort of food crime is often linked to other manifestations of food crime, such as livestock theft, document fraud, and misrepresentation. Such practices are damaging to law-abiding food business operators, who comply with the regulatory requirements, both as there are lower costs associated with operating outside of approval, and as the existence of unregulated business could undermine confidence in the UK food industry.

The NFCU worked to support and coordinate a local authority led investigation into a suspected illegal meat supplier. The initial concerns were that the meat was derived from stolen livestock. The subject of the investigation used an identified social media Facebook page as a 'shop window' to advertise the product and direct customers on how to buy the meat.

The NFCU worked with the police, local authority food teams, and other partners to co-ordinate activity at the suspect's premises. On two separate occasions, a total of 5.3 tonnes of meat, roughly translating to three full transit vans, was discovered being prepared in unsanitary conditions rather than a registered and hygienic food preparation environment. It is suspected that a significant amount of meat had already been supplied to consumers in addition to the meat seized.

Whilst initial concerns regarding stolen livestock were not proven in this instance, support from local rural policing partners aided enquiries and produced useful information for the future.

An investigation into identified regulatory offences continues to be led by the local authority, and the NFCU are supporting financial investigation into the subject as a result of this activity.

Discussion

The product was due to be distributed across a large geographical area, spanning the north and south of England, which demonstrates the reach that such interventions can have in protecting consumers across the UK. The FSA's assessments of potential risk, including details of how and where the meat was produced, resulted in a FAFAs notice being issued. FAFAs are issued by the FSA and provide local authorities with details of specific action to be taken on behalf of consumers. In this instance, authorities were asked to contact premises who may have purchased the product and to ensure they were withdrawn from the market and recalled from consumers.

NFCU's support and co-ordination resulted in a significant amount of meat being removed from the market and protected consumers from unsafe meat. Working across teams with both internal and external partners also led to:

- the service of a Remedial Action Notice and Hygiene Emergency Prohibition notice stopping the unlawful business from operating;
- discussions with FSA teams responsible for policy development to ensure any appropriate preventative measures regarding online sales are taken forward;
- applications from the operator of the unregistered food business for appropriate approvals, making their activities visible to the regulators, who can ensure the safety and hygiene of production. This also ensured a potential food business operator was aware of food safety law, further protecting their consumers.

There is still work to be done to increase the understanding and ability to prevent criminality associated with unlawful processing, as well as to understand the demands for products within specific communities in the UK. Strong partnership action such as this has, however, strengthened NFCU knowledge and ability to tackle similar issues in the future, has protected consumers from potential harm, and helped level the playing field for legitimate businesses in this sector.

Case Study 5.6 Operation OPSON and the Food Industry Intelligence Network

Overview

The Food Industry Intelligence Network (FIIN) supported UK Regulators during Operation OPSON VII (2017-18), which focused on illegal treatment of tuna in the supply chain. Information and expertise provided on the supply chain were invaluable in supporting intelligence gathering and enforcement activities in the UK and across Europe. The activity strengthened relations between regulators and FIIN and assisted in outlining the scale of illegal activity from a global perspective.

Background

The FIIN consists of 46 major food businesses active in the UK. They co-operate to share anonymised and aggregated authenticity testing data to enhance their response to potential food crime threats such as product adulteration or misrepresentation, discernible either from regulatory activity and intelligence, or from industry supply chain assurance. UK food standards agencies have signed Information Sharing Agreements (ISAs) with FIIN. This relationship continues to develop and has allowed for the sharing of valuable information including tens of

thousands of lines of data each year, contributing to the identification and investigation of food crime, and supporting a number of national operations.

Discussion

The ISA between FIIN and both SFCIU and NFCU has provided a collaborative gateway to share intelligence and data in relation to vulnerabilities across the supply chain. This has supported threat assessment, targeting of authenticity sampling, and general situational awareness. NFCU and SFCIU are also involved in the FIIN's plenary meetings and the development of food fraud awareness training.

Operation OPSON is a yearly Europol/Interpol joint operation focused on counterfeit and substandard food and beverages which is coordinated by SFCIU and NFCU in the UK.

The relationship between the NFCU, SFCIU, and FIIN was particularly effective during OPSON VII which targeted the production and distribution of illegally treated processed tuna. This related to extension of durability dates and use of chemicals and additives to enhance the visual appearance of poorer quality tuna. This issue was a concern at a global level, involving organised crime, and it was suspected that fraudulent product was entering the UK supply chains. This not only defrauds UK businesses and consumers but poses a health risk to consumers from histamine and high levels of chemical and additives injected into the tuna.

Due to the complex nature of the tuna supply chain and sophistication of the fraud, support from FIIN provided an enhanced understanding of these issues and allowed access to experts in this area. These insights provided by FIIN were shared with other agencies and supported a number of significant enquiries across Europe. The specialist knowledge provided from FIIN also assisted in directing the focus of the sampling undertaken in the UK, where a picture on illegal treatments could be developed and patterns drawn from the findings.

Along with sampling and intelligence activity occurring in the UK for the operation, there were more than 51 tonnes of tuna suspected to have been illegally treated seized across Europe.¹⁶¹ The operation found that the fraud was an established, on-going, and highly organised criminal practice. An assessment by the SFCIU capturing the findings of the operation was presented to the EU Food Fraud Network which included a number of recommendations informed by consultation

¹⁶¹ Europol, 'Operation Opson VII – Analysis Report' (2019),
[REDACTED]
[REDACTED]

with FIIN. The link between the regulator and industry was key in understanding the threat and vulnerability to consumers and responsible businesses in the UK from criminality within the tuna supply chain, and as part of seeking to develop a preventative approach moving forward.

The fusion of FIIN's insight and expertise and the NFCU's and SFCIU's intelligence and operational co-ordination makes clear the importance of the regulatory relationship with FIIN. The success of the operation highlights the value of similar activities as well as the importance of creating and expanding relationships with other industry bodies as part of a holistic food crime response.

Case Study 5.7 Activities of the Food Authenticity Network and Centres of Expertise

Overview

The Food Authenticity Network (FAN) is helping to build a more resilient, secure, global food supply chain. This is achieved through collating, curating, and raising **awareness of the tools available to check for and mitigate against food fraud, providing an accessible and valuable network for an increasingly global stakeholder community.**

FAN also helps to **ensure that the UK has access to a resilient network of laboratories by providing fit for purpose testing through the food authenticity Centres of Expertise (CoE) acknowledged on its website.**

FAN now has over 2,600 members from 81 countries and territories. In 2020, it attracted over 21,500 unique users from 133 different countries to its open access website. Its international membership enables sharing of best practice information for the benefit of all stakeholders, helping to raise standards worldwide, whilst showcasing UK global leadership in food authenticity testing and food fraud detection.

Background

The FAN was set-up in July 2015 by LGC (formerly known as Laboratory of the Government Chemist) with funding from Defra, as a response to

recommendations in the Elliott Review.¹⁶² The Elliot Review was an independent review into the integrity and assurance of food supply networks that was commissioned following the horsemeat incident in 2013. The report highlighted the need for access to resilient and sustainable laboratory services that use standardised validated approaches. FAN gathers information on food authenticity testing, food fraud mitigation, and food supply chain integrity and disseminates it via its open access website. FAN is led by LGC and funded through a public-private partnership approach.

Discussion

Recognising that no one organisation will be equipped with all the necessary expertise in all methods and techniques used in food authenticity testing and all of the different commodity groups impacted by food fraud, fourteen CoEs covering different disciplines and techniques are acknowledged on the FAN. Following a recent workshop and incident simulation exercise for CoEs, a framework of collaboration is being developed to lay out how a collective technical view can be formulated during an emergency national or international food fraud incident. The framework also considers how laboratory capability and capacity issues could be mitigated during a serious future incident, minimising the impact of such an event on legitimate businesses and consumers.

FAN also undertakes a range of knowledge transfer activities to disseminate best practice information to industry, enforcement, and analysts, through publication of e-seminars and a new programme of quarterly webinars covering topics from allergen risk assessments to fish speciation.

FAN recently collaborated with Mérieux NutriSciences to undertake a detailed assessment of data presented at a webinar in April 2020, which showed a ‘dramatic’ increase in food fraud activity at the beginning of 2020 and attributed this to the COVID-19 pandemic. The assessment found that although the pandemic had increased food fraud vulnerability, there was insufficient evidence of ‘dramatic’ increases in specific COVID-19 related food fraud incidents.

¹⁶² Defra and FSA, ‘Elliot review into the integrity and assurance of the food supply networks: final report’ (2014), <https://www.gov.uk/government/publications/elliott-review-into-the-integrity-and-assurance-of-food-supply-networks-final-report>.

Figure 5.7a: FAN number of unique users by country, 2020¹⁶³

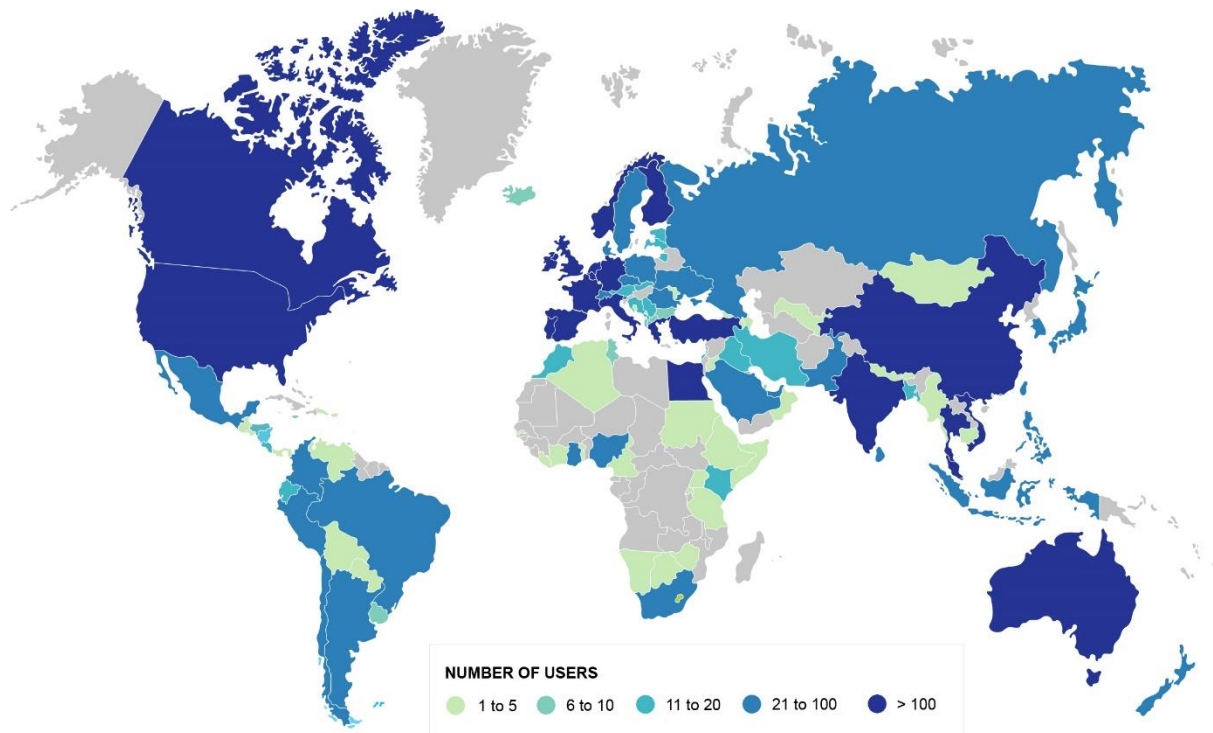
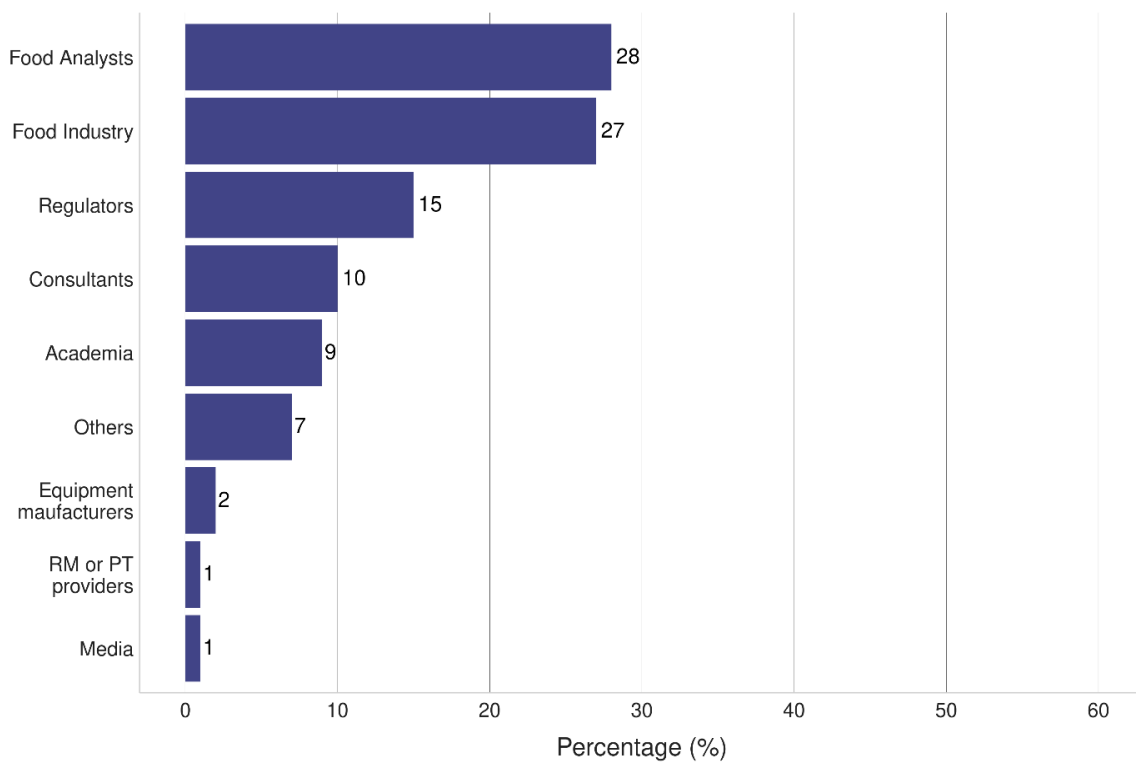


Figure 5.7b: FAN1b – FAN membership by professional category in 2021



¹⁶³ FAN, 'What we do', <https://www.foodauthenticity.global/FAN>.

About the UK Food Security Report

The UK Food Security Report sets out an analysis of statistical data relating to food security, examining past, current, and predicted trends relevant to food security to present the best available understanding of food security. It fulfils a duty under [Part 2, Chapter 1 \(Section 19\) of the Agriculture Act 2020](#) to prepare and lay before Parliament “a report containing an analysis on statistical data relating to food security in the United Kingdom”. The first report must be published before Christmas Recess 2021, and subsequent reports must be published at least once every three years thereafter.


It contains statistics for different time periods, but always using latest available data at the time of release. Data comes from surveys run by Defra and from a wide range of other sources including government departments, agencies and commercial organisations, in the UK and internationally.

Associated datasets from this publication are also available. Data are a mixture of National Statistics, Official Statistics and unofficial statistics. Unofficial statistics are used where there are gaps in the evidence base. Further information on National Statistics can be found on the [Office for Statistics Regulation](#) website.

Contact and feedback

Enquiries to: foodsecurityreport@defra.gov.uk

You can also contact us via Twitter: 

We want to understand the uses that readers make of this new report. To help us ensure that future versions of this report are better for you, please answer our short questionnaire to send us 

Production team: Matt Bardrick, Jasmin Eng, Ros Finney, Luke Hamilton, Jenny Kemp, David Lee, Jeremy Levett, Will Norman, Maria Prokopiou, Andrew Scaife, Chris Silwood, Jonathan Smith, Beth White, Isabella Worth.

We are extremely grateful to the following for their expert contributions and guidance throughout the synthesis of this Report, helping to ensure it delivers a thorough analysis of a robust evidence base:

- Professor Tim Benton, Chatham House
- Dr Tom Breeze, University of Reading
- Professor Bob Doherty, University of York and FixOurFood
- Selvarani Elahi MBE, UK Deputy Government Chemist, LGC
- Dr Pete Falloon, Met Office, Climate Service Lead - Food Farming & Natural Environment
- Alan Hayes, Food Systems and Sustainability Advisor
- Dr John Ingram, University of Oxford
- Professor Peter Jackson, Institute for Sustainable Food, University of Sheffield
- Dr Ian Noble, Mondelez International
- Dr Bill Parker, Head of Technical Programmes, AHDB
- Dr Maddy Power, Wellcome Trust

Appendix

Theme 1 – Global Food Availability

Index numbers used in figures 1.1.1a, 1.1.2a, and 1.1.5f

An index number is statistical measure that reflects a price or quantity compared with a standard or base value. The base usually equals 100 and the index number is usually expressed as 100 times the ratio to the base value. For example, if food production per capita in 2010 was twice as large as its 5-year average between 2014-2019, its index number would be 200 relative to 2014-2019.

Indicator 1.1.2, figure 1.1.2.a

The Organisation for Economic Co-operation and Development (OECD) is made up of Australia, Austria, Belgium, Canada, Chile, Colombia, Costa Rica, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Iceland, Italy, Israel, Japan, South Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden Switzerland, Turkey, the UK, and the US. MENA refers to Middle East and North Africa.

Theme 3 – Food Supply Chain Resilience

Case study 3.6, figure 3.1.8a

Consumer purchasing behaviours pre and post lockdown (Kantar, Worldpanel FMCG, England, Wales, and Scotland): year on year trips per household and year on year purchased volume per trip.

The Kantar Take Home household panel is made up of 30,000 households that are chosen to be demographically representative of the Great British population, by region of the country, household size, presence of children, and age of main shopper. Socio-economic group is not included in the sample targets but is part of the weightings applied to ensure the survey population is representative of GB. Panellist population targets are obtained from the results of the BARB Establishment Survey and the Office for National Statistics (ONS).

The panel reports on a continuous basis on all Fast Moving Consumer Goods purchases that are brought back into the home, reporting where items were purchased, what was purchased, how much was paid and if a promotion was used.

Theme 4 – Food Security at Household Level

Indicator 4.1.4, figures 4.1.4a-d

Scoring: The categories of 'high', 'marginal', 'low', and 'very low' food security are based on the points scored out of the ten questions.

High food security, or a score equal to 0, means the household has no problem, or anxiety about, consistently accessing adequate food.

Marginal food security, or a score of 1 or 2, means the household had problems at times, or anxiety about, accessing adequate food, but the quality, variety, and quantity of their food intake were not substantially reduced.

Low food security, or a score of 3 to 5, means the household reduced the quality, variety, and desirability of their diets, but the quantity of food intake and normal eating patterns were not substantially disrupted.

Very low food security, or a score of 6 to 10, means that at times during the last 30 days, eating patterns of one or more household members were disrupted and food intake reduced because the household lacked money and other resources for food.

Disability - In this dataset, a person is defined as having a disability if they regard themselves as having a long-standing illness, disability, or impairment which causes substantial difficulty with day-to-day activities. Some people classified as disabled and having rights under the Equality Act 2010 are not captured by this definition, such as people with a long-standing illness or disability which is not currently affecting their day-to-day activities.

Ethnicity - The ethnic groups used in the data denote the group to which respondents consider that they belong.

Sample sizes for 'Gypsy, Traveller or Irish Traveller' are small. In Northern Ireland, 'Irish Traveller' is included in 'Other ethnic group' whereas in England, Scotland, and Wales, 'Gypsy or Irish Traveller' is included in 'White'. The group 'Arab' is included in 'Other ethnic group'.

The group 'Asian/Asian British' includes 'Indian', 'Pakistani', 'Bangladeshi', 'Chinese', and 'Any other Asian background'.

It is not possible to disaggregate the group 'Black/African/Caribbean/Black British' due to differences in data collection of the country specific question.

Theme 5 – Food Safety and Consumer Confidence

Indicators 5.1.1 and 5.1.2

In England, Wales, and Northern Ireland consumer confidence in food and its regulation is measured through Food and You 2, the FSA’s flagship survey, which is an Official Statistic. In Scotland consumer confidence is measured through the Food in Scotland Consumer Tracking Survey.

The Food and You 2 survey conducted biannually by the FSA since 2020, measures self-reported consumer knowledge, attitudes, and behaviours related to food safety and other food issues amongst adults (16+ years) in England, Wales, and Northern Ireland.

The survey is primarily carried out online using a methodology known as ‘push-to-web’. Fieldwork for Wave 2 was conducted between 20 November 2020 and 21 January 2021. A total of 5,900 adults from 3,955 households across England, Wales and Northern Ireland completed the survey.

The Food in Scotland Consumer Tracking Survey monitors attitudes, knowledge and reported behaviours relating to food amongst a representative sample of Scotland’s population, identifying changes over time. The survey is online and 1,016 Scottish adults were surveyed for Wave 11.

Direct comparisons cannot be made between these two data sources due to methodological differences and different time periods covered by the surveys. As such, data are presented separately for England, Wales, and Northern Ireland (combined) and Scotland.

Many of the indicators in this section for FSA findings do not have time series data. This is because the primary source of this data for England, Wales, and Northern Ireland (the FSA’s Food & You 2 survey) commenced in 2020 therefore there are not enough waves of data to present a time series or make any assessments regarding trends. FSS’s Food in Scotland consumer tracker survey does contain time series data, and future iterations of the UK Food Security Report will include FSA and FSS time series data to presents trends subject to the FSA retaining these questions.

Indicator 5.1.1 Consumer confidence in the food system and its regulation

Figure 5.1.1a FSA respondents – confidence that food is safe to eat: Food and You 2, Wave 2 (2021)

Figure 5.1.1b FSA respondents – confidence that information on food labels is accurate. Food and You 2, Wave 2 (2021)

Question: How confident are you that... A) the food you buy is safe to eat. B) the information on food labels is accurate (for example, ingredients, nutritional information, country of origin, Base= 4814, all respondents. N.B. 'Very confident' or 'Fairly confident' respondents are referred to as confident.

Figure 5.1.1c FSS respondents – trust in food label information: Food in Scotland Consumer Tracker Survey Wave 11 (2021)

Question: How much do you agree or disagree with each of these statements? I trust the information on food labels, Base = 1016. 'I definitely agree' and 'I tend to agree' are referred to as 'Agree' and 'I definitely disagree' and 'I tend to disagree' are referred to as disagree.

Figure 5.1.1d FSA respondents – trust in the FSA: Food and You 2, Wave 2 (2021)

Question: How much do you trust or distrust the Food Standards Agency to do its job? Base=3309, all respondents who know a lot or a little about the FSA and what it does. N.B. 'I trust it a lot' and 'I trust it' referred to as trust.

Figure 5.1.1e FSS respondents – trust in FSS: Food in Scotland Consumer Tracker Survey Wave 11 (2021)

Question: How much do you trust or distrust Food Standards Scotland to do its job? Base= those aware of FSS W11 827. Trust is classed as those who responded 'I trust it a lot' and 'I trust it'. Distrust is classed as those who responded 'I distrust it' and 'I distrust it a lot'

Figure 5.1.1f FSA respondents - Consumer confidence in the food supply chain: Food and You 2, Wave 2 (2021)

Question: How confident are you in the food supply chain? That is all the processes involved in bringing food to your table. Base= 4814, all online respondents and those answering the Eating at Home postal questionnaire. N.B. 'Very confident' or 'Fairly confident' respondents are referred to as confident.

Figure 5.1.1g FSA respondents – confidence that food supply chain actors ensure food is safe to eat in: Food and You 2, Wave 2 (2021)

Question: How confident are you that... A) Farmers, B) Slaughterhouses and dairies, C) Food manufacturers for example, factories, D) Shops and supermarkets, E) Restaurants, F) Takeaways, G) Food delivery services for example, Just Eat, Deliveroo, Uber Eats...in the UK (and Ireland) ensure the food you buy is safe to eat. Base= 4850, all online respondents and those who completed the Eating Out postal questionnaire.

Indicator 5.1.2 Consumer Concerns

Figure 5.1.2a FSA respondents– ten most common prompted concerns: Food and You 2, Wave 2 (2021)

Question: Do you have concerns about any of the following? Responses : The amount of sugar in food, Food waste, Animal welfare, Hormones, steroids or antibiotics in food, The amount of salt in food, The amount of fat in food, Food poisoning, Food hygiene when eating out, The use of pesticides, Food fraud or crime, The use of additives (for example, preservatives and colouring), Food prices, Genetically modified (GM) foods, Chemical contamination from the environment, Food miles, The number of calories in food, Food allergen information, Cooking safely at home, None of these, Don't know. Base= 3764, all online respondents.

Figure 5.1.2b: FSS respondents – ten most common prompted concerns: Food in Scotland Consumer Tracker Survey Wave 11 (2021)

Question: Please sort each of these issues according to whether or not they cause you concern or do not cause you concern.

Figure 5.1.2c FSA respondents – concern about availability of a wide variety of food: Food and You 2, Wave 2 (2021)

Question: (In England and Wales) Thinking about food today in the UK and Wales, how concerned, if at all, do you feel about each of the following topics? The availability of a wide variety of food: Base = 5900

Question: (In Northern Ireland) Thinking about food today in the UK and Northern Ireland, how concerned, if at all, do you feel about each of the following topics? The availability of a wide variety of food: Base = 5900

Indicator 5.1.4 Food safety incidents, alerts and recalls

Figure 5.1.4b

'Pathogenic Micro-Organisms' incidents relate to suspected, possible, or actual contamination by harmful bacteria, fungi, or viruses. It also includes concerns about measures to control the risk from pathogenic micro-organisms. In contrast, 'Non-Pathogenic Micro-Organisms' incidents primarily relate to fungi or bacteria of a non-pathogenic or unidentified species.

The concern for 'Mycotoxins' and 'Biotoxin (other)' incidents is contamination by toxins produced by living organisms. Mycotoxins such as aflatoxins are produced by certain moulds that grow on crops and other feedstuffs. 'Biotoxin (other)' incidents include algal toxins in shellfish, which are mainly reported as part of the

regular monitoring of shellfish beds. 'Bio-contaminants (other)' incidents include sewage spills and toxins produced by the degeneration of animal or vegetable material.

'Residues of Veterinary Medicinal Products' incidents accounted for most of the notifications in the 'Farming Practices' group. This includes those incidents that are routinely reported from the long-standing Statutory Surveillance Programme of residues of veterinary medicines in food producing animals.

Many of the incidents in the 'Industrial/Chemical' group relate to 'Chemical contamination (other)' notifications. Almost all of such incidents related to fires, which recorded possible risks due to the production of potentially carcinogenic polycyclic aromatic hydrocarbons (PAHs) during combustion. From the 2017/18 Reporting Year onwards, a dedicated CHEMET (Chemical Meteorology) category was introduced for such incidents. 'Heavy Metal' incident notifications primarily involve lead and copper poisoning, usually occurring on farm to livestock.

Incident notifications relating to migrant travel were previously recorded in "Not Determined/Other" or "Poor or Insufficient Controls" categories. The 2017/18 Reporting Year saw the introduction of a dedicated 'Clandestine Travellers' (stowaways) category to refine the recording of the associated hazard type.

'Allergens' incidents concern the undeclared presence of allergens, either as cross-contamination or undeclared ingredients. Labelling issues can include improper health claims, incorrect date labels and misleading food descriptions or usage instructions.

'Foreign Bodies' incidents refer to physical contamination notifications, whereby unintended material (e.g., glass, metal, plastic or from an animal origin) is present in the product.

'Poor or Insufficient Controls' include incidents resulting from lack of good manufacturing practice such as poor temperature control of perishable foods, undercooking, unhygienic premises, and inadequate documentation.

Furthermore, the 'Adulteration/Fraud' category includes counterfeit products; illegal import and export (including irregularities with documentation), and the use of unauthorised premises to produce food. It should be noted the FSA's National Food Crime Unit use a refined definition when reporting the number of fraud-related incidents. In particular, this would not typically include incidents where there is no or limited evidence of intention to deceive. A similar process exists for the Scottish Food Crime & Incidents unit.

Indicators 5.1.5 and 5.1.6 Foodborne disease

The UK Health Security Agency (UKHSA), Public Health Wales (PHW), Public Health Scotland (PHS) and the Public Health Agency Northern Ireland (PHA) are responsible for the surveillance¹⁶⁴ of pathogens (primarily bacteria, viruses and parasites) that can cause gastrointestinal disease, including diseases related to food poisoning. The public health agencies are also the lead organisations responsible for the detection, investigation and reporting of foodborne disease outbreaks in the UK, working in partnership with food safety, animal health and local authority colleagues. Data presented in this report are derived from laboratory reports of gastrointestinal pathogens from clinical diagnostic laboratories and the systematic surveillance of outbreaks of foodborne disease.

Indicator 5.1.5 Prevalence of foodborne pathogens

While not all gastrointestinal infections are foodborne, food is an important vehicle of transmission (FSA, 2020)¹⁶⁵ for many gastrointestinal pathogens that cause a substantial public health burden (WHO, 2015)¹⁶⁶. The term “burden of disease” is used to describe the overall cumulative consequences of a defined disease. While *Campylobacter* and *Salmonella* cause the greatest burden of disease in terms of number of reported cases each year, *Listeria monocytogenes* and Shiga toxin-producing *E. coli* (STEC) O157 cause more severe disease leading to higher rates of hospitalisation and death. There are many other gastrointestinal pathogens and microbial contaminants that have a food safety impact, such as norovirus, hepatitis A, *Cryptosporidium* sp. and *Clostridium* sp. Further information on surveillance indicators for these pathogens is available elsewhere, including on the UKHSA, PHS, PHW and PHA websites and in outbreak reports.

Surveillance based on laboratory confirmed reports of gastrointestinal disease generally starts with a clinical diagnostic sample being taken by a general practitioner (GP) or at a hospital from an individual suffering with gastrointestinal disease symptoms, usually most commonly vomiting and/or diarrhoea. It is mandatory for testing laboratories to notify the public health agencies within 7

¹⁶⁴ Surveillance is defined as the systematic collection, analysis and interpretation of data essential to the planning, implementation and evaluation of public health practice, and the timely dissemination of this information for public health action.

¹⁶⁵ FSA, 2020. Foodborne Disease Estimates for the United Kingdom in 2018
https://www.food.gov.uk/sites/default/files/media/document/foodborne-disease-estimates-for-the-united-kingdom-in-2018_0.pdf

¹⁶⁶ World Health Organisation 2015: [WHO estimates of the global disease burden of foodborne diseases](#)

days when certain specified pathogens are isolated from human clinical diagnostic samples under Health Protection Regulations¹⁶⁷.

Once a laboratory result is available, this, together with epidemiological information on each case is reported into national surveillance databases and case management systems in each country. For three of the four key bacterial gastrointestinal pathogens, non-typhoidal *Salmonella*, STEC O157 and *Listeria monocytogenes*, the testing laboratory will forward the isolates to the relevant public health agency's National Reference Laboratory for further characterisation by whole genome sequencing (WGS). For *Campylobacter*, currently only a proportion of isolates, usually those associated with outbreaks, are forwarded to the reference laboratories for WGS.

Using these surveillance databases, regional and national public health protection teams throughout the UK analyse the laboratory test results, WGS data and epidemiological data. The aim is to monitor trends in reporting of gastrointestinal pathogens, changes in disease epidemiology and to detect new and/or emerging disease threats, including foodborne disease outbreaks, so that timely and appropriate action to protect public health can be taken.

No disease surveillance system is perfect and there is known under-ascertainment of infectious gastrointestinal disease and for every laboratory confirmed report of gastrointestinal disease made to national surveillance systems, there will be additional unreported cases in the community due to people not seeking healthcare for their illness or samples for laboratory testing not always being taken even when they do. There are various estimates available attempting to quantify the under-reporting of gastrointestinal pathogens. In the UK, the measures used most commonly by the public health and food safety agencies when assessing the burden of infectious gastrointestinal diseases have been derived from a large research study undertaken in 2008-2009 (Tam et al, 2012)¹⁶⁸. The researchers estimated that for every case of infectious intestinal disease where a sample is taken and tested at a diagnostic laboratory with a confirmed result subsequently reported to national surveillance, there were 147 (95% CI, 136 - 158) community

¹⁶⁷ Health Protection (Notification) Regulations 2010 <https://www.legislation.gov.uk/uksi/2010/659/contents/made> and <https://www.legislation.gov.uk/wsi/2010/1546/contents/made> and Public Health etc. (Scotland) Act 2008.

https://www.legislation.gov.uk/asp/2008/5/pdfs/asp_20080005_en.pdf

¹⁶⁸ Tam, C.C., Rodrigues, L.C., Viviani, L., Dodds, J.P., Evans, M.R., Hunter, P.R., Gray, J.J., Letley, L.H., Rait, G., Tompkins, D.S. & O'Brien, S.J. (2012) Longitudinal study of infectious intestinal disease in the UK (IID2 Study): incidence in the community and presenting to general practice. *Gut* 61(1), 69-77 doi: 10.1136/gut.2011.238386 <https://www.food.gov.uk/research/research-projects/the-second-study-of-infectious-intestinal-disease-in-the-community-iid2-study>

cases that remained unreported. The extent of under-reporting varies by pathogen. The study established that the ratio of unreported human *Campylobacter* disease to reports to national surveillance is 9.3 to 1 (95% CI 6-14.3), suggesting that in 2019, there were over 600,000 cases of campylobacteriosis in the UK. For *Salmonella* it is estimated that for every report of non-typhoidal *Salmonella* infection made to national surveillance, there are potentially 4.7 cases of salmonellosis in the community (95% CI 1.2 – 18.2), suggesting the total number of undiagnosed *Salmonella* cases in the UK community in 2019 was 45,703 (95% CI 11,688-176,977).

In relation to figure 5.1.5b and rate of reported *Campylobacter* sp., non-typhoidal *Salmonella* sp., STEC O157 and *Listeria monocytogenes* infections in the United Kingdom, 2015-2020. The table below includes the data of reported infections per 100,00 population in the United Kingdom, 2015-2020

Year	<i>Campylobacter</i> sp.	Non typhoidal <i>Salmonella</i> sp.	STEC O157	<i>Listeria monocytogenes</i>
2015	97.06	14.56	1.35	0.29
2016	90.1	14.64	1.49	0.31
2017	96.34	15.16	1.17	0.24
2018	102.33	15.21	1.26	0.26
2019	101.81	14.56	1.07	0.23
2020	82.31	7.98	0.86	0.22

It must be noted that the 2020 surveillance data indicators cannot be compared to the data from previous years, as a substantial and sustained reduction in reporting of gastrointestinal pathogens to national surveillance has been observed coinciding with the SARS-CoV-2 (COVID-19) pandemic. The impact is likely multi-factorial and related to the introduction of non-pharmaceutical interventions (NPIs) to control the pandemic, for example due to the effects of lockdowns on people's behaviours making them less at risk of acquiring infections, such as changes in eating out. However, changes in health care seeking behaviour are also likely to have contributed, with fewer people visiting general practitioners and hospitals and having samples taken for testing as well as changes in laboratory testing practices. Therefore, trend analysis for the data presented in this report should only be considered for 2015 – 2019, with exclusion of 2020 data.

Indicator 5.1.6 Foodborne disease outbreak surveillance

Systematic surveillance of foodborne disease outbreaks starts with UKHSA, PHW, PHS and/or PHA receiving preliminary reports of outbreaks of gastrointestinal disease from laboratories, health protection teams or boards or local authority environmental health departments or through detection of outbreaks through analysis of laboratory report exceedances or WGS data and epidemiological data. An appropriate minimum dataset for each outbreak is collected and supplemented

with additional information as it becomes available during the investigation. This standardised dataset includes date and place of outbreak, number of cases, case demographic, admission to hospital, associated fatalities, details of the food vehicle suspected or implicated in the outbreak, the level of evidence implicating the food vehicle and contributory factors considered significant in terms of causality in the outbreak.

Data derived from foodborne outbreak investigations in England and Wales is reported into a stand-alone, web-based surveillance system: eFOSS (the electronic Foodborne and non-foodborne Gastrointestinal Outbreak Surveillance System). Data for Scotland is reported into a similar system: ObSurv, the surveillance system for all general outbreaks of infectious gastrointestinal disease in Scotland. In Northern Ireland data for foodborne outbreaks is collated in a local database for monitoring outbreaks of infectious disease in general. The surveillance information derived from foodborne disease outbreak investigations (comparable datasets based on accepted international definitions and criteria) is collated in these dedicated national surveillance databases and case management systems and summarised to provide annual national datasets. This national level foodborne outbreak surveillance data, the collation of which started nearly 30 years ago in 1992, provides an important source of information for foodborne disease trend analysis that is used alongside general surveillance indicators for gastrointestinal pathogens to inform risk assessment and policy development for the protection of UK consumers against risks posed by foodborne disease.

Only data for general outbreaks of foodborne disease are collated and presented in surveillance reports, i.e. household/family outbreaks and foreign travel associated outbreaks are excluded. Norovirus outbreaks associated with hospitals, other institutional/residential settings (care homes, schools, prisons, etc) and community outbreaks that are due to person-to-person transmission are also excluded from the foodborne outbreak datasets.

Not all outbreaks are microbiologically linked to an implicated food vehicle as food vehicles are not always identified or available for microbiological testing, and the level of evidence derived through epidemiological and microbiological investigations varies with some outbreaks having stronger epidemiological evidence in support of a link between the implicated food product and the outbreak than in other outbreaks. Additionally, for some outbreaks not all individuals linked to the outbreak will have laboratory confirmation of illness. The number of hospitalisations reported is only known for cases which received public health follow-up, e.g. via interviews with cases or through notification by their doctor, which is more likely to occur for certain pathogens such as STEC and *Listeria monocytogenes*. Ascertainment of both cases and hospitalisation varies according to the clinical severity and differences in testing of the causative agent

(for example, testing for *Listeria monocytogenes* predominately occurs in people who are hospitalised, so non-hospitalised cases are less likely to be identified), as well as due to the setting of the outbreak. Where individuals are reported to have died, it is usually not known whether the cause of death was directly related to the outbreak.

In relation to figure 5.1.6b, the number of foodborne outbreaks by causative agent investigated and reported to national public health surveillance in the UK 2015 – 2020

Number of outbreaks per pathogen	2015	2016	2017	2018	2019	2020	Total
<i>Salmonella</i> sp.	11	12	13	10	15	7	68
Enteric viruses*	3	10	7	11	16	2	49
<i>Campylobacter</i> sp.	11	8	9	7	3	4	42
<i>Clostridium perfringens</i>	12	8	2	6	7	4	39
STEC/ Enteroinvasive <i>E. coli</i> (EIEC)	6	8	6	2	6	7	35
<i>Listeria monocytogenes</i>	0	0	0	2	3	3	8
<i>Shigella</i> sp.	2	0	0	1	0	0	3
<i>Cryptosporidium</i> sp.	1	0	0	0	0	0	1
Other**	1	1	1	1	1	1	6
Unknown***	6	2	0	9	6	2	25
Total	53	49	38	49	57	30	276

*Includes foodborne norovirus outbreaks or norovirus outbreaks related to infected food handlers

**'Other' includes marine biotoxins such as scrobotoxin and okadaic acid as well as other enterotoxin producing bacteria such as *Staphylococcus* or *Bacillus* spp.

***'Unknown' are outbreaks where a causative agent was not identified as the cause of the disease in the outbreak associated human disease cases

Public Health Agencies in the UK now routinely perform whole genome sequencing (WGS) for genomic characterisation for several bacterial gastrointestinal pathogens, including *Salmonella* spp., *Listeria monocytogenes*, *Shigella* spp, *Yersinia* spp and shigatoxin producing *E. coli* (STEC). Isolates of *Campylobacter* spp may be submitted for WGS to inform specific outbreak investigations, but this is not always a routine approach.

The high resolution WGS typing of isolates for pathogen strain discrimination provides has enhanced the detection of outbreaks and enables 'sensitive and specific' case definitions to be applied, improving case ascertainment, focussing outbreak investigations and increasing the strength of association in analytical studies to identify the implicated food vehicles. Where possible integration of the microbiological genomic and epidemiological data derived from analysis of the human disease data with that from animal samples, environmental sampling or the

food chain, has significantly improved the ability to identify the source of the outbreak and better understand transmission of contamination through food supply chains. The use of WGS has also resulted in an enhanced ability to detect re-emergence of outbreaks and trace them back to the same source of contamination as previously identified when control measures have not been fully effective in eliminating contamination (PHE, 2018)¹⁶⁹.

Implementation of WGS has enabled the consolidation of multiple local/regional outbreaks into single national level outbreaks based on the WGS and epidemiological information obtained during the investigations. This has resulted in a higher proportion of outbreaks being identified to be national rather than local/regional outbreaks with an associated increase in case numbers (Mook et al, 2018)¹⁷⁰. Therefore, while consideration of total numbers of outbreaks reported is useful, these data are affected by whether WGS is used or not. Both the re-emergence of cases associated with outbreak clusters and the consolidation of multiple outbreaks into large national outbreaks of long duration has meant that comparison of number of foodborne outbreaks and number of associated cases pre and post the implementation of WGS should be undertaken with caution, and the foodborne outbreak surveillance data reported for the years prior to implementation of WGS (pre-2014 for *Salmonella*, pre-2015 for STEC and *Shigella* and pre-2017 for *Listeria monocytogenes*) is not directly comparable to the data held for subsequent years. Therefore, the size of the outbreak and number of individuals affected should be considered together with the information given on the overall numbers of outbreaks in this report.

Although whole genome sequencing is able to provide a highly discriminatory method to determine the genetic relatedness of bacterial strains and therefore improved detection of outbreaks and greater accuracy in ascertaining numbers of associated human outbreak cases, there is still under-ascertainment generally due to underreporting to healthcare settings and surveillance systems. It must also be noted that, as the foodborne outbreak surveillance databases rely upon reports to national surveillance systems, there is likely to be under-ascertainment due to incomplete reporting.

The COVID-19 pandemic impact is possibly less apparent in the foodborne disease outbreak surveillance data than in the laboratory testing surveillance data, but there are some notable differences in the 2020 data compared to the data

¹⁶⁹ PHE, 2018. Implementing pathogen genomics: a case study. <https://www.gov.uk/government/publications/implementing-pathogen-genomics-a-case-study>

¹⁷⁰ Mook P, Gardiner D, Verlander NQ, McCormick J, Usdin M, Crook P, Jenkins C, Dallman TJ. Operational burden of implementing Salmonella Enteritidis and Typhimurium cluster detection using whole genome sequencing surveillance data in England: a retrospective assessment. *Epidemiol Infect.* 2018 Aug;146(11):1452-1460. doi: 10.1017/S0950268818001589. Epub 2018 Jul 2. PMID: 29961436.

collected in the previous five years. These impacts are also likely related to the introduction of non-pharmaceutical interventions (NPIs) as well as multifactorial influences on surveillance systems for the detection and reporting of gastrointestinal pathogen outbreaks and potentially also impacted by the reduced resource availability for the investigation and reporting of particularly smaller regional foodborne outbreaks caused by pathogens with less severe clinical outcomes. The reduced number of *Campylobacter* and norovirus outbreaks is likely linked to the almost year-long restrictions on large events such as weddings where foods particularly associated with *Campylobacter* outbreaks (chicken liver pate/parfait) are often served and the closure of hospitality during national lockdowns is likely to have reduced consumption of raw oysters commonly associated with foodborne norovirus outbreaks, with also fewer outbreaks associated with infected food handlers. However, other influencers such as reduced investigation and reporting of outbreaks during 2020 due to COVID-19 make interpretation of these trends difficult.

E02702656

978-1-5286-3111-2