

Heckington Fen Solar Park

EN010123

ES Technical Note– Updated Information on Cumulative Projects

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ES TECHNICAL NOTE - UPDATED INFORMATION ON CUMULATIVE PROJECTS

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1. Introduction

- 1.1. The Heckington Fen Solar Park Development Consent Order (DCO) application is for the construction, operation (including maintenance), and decommissioning of a ground mounted solar photovoltaic (PV) electricity generation and energy storage facility (hereafter referred to as “the Energy Park”), cable route to, and above and below ground works at, the National Grid Bicker Fen Substation (hereafter referred to as “the Proposed Development” (inclusive of Energy Park)) on land at Six Hundreds Farm, Six Hundreds Drove, East Heckington, Sleaford, Lincolnshire.
- 1.2. The purpose of this document is to provide an update to the cumulative effect assessment undertaken in the Environmental Statement (ES) since the submission of the DCO application on the 15th February 2023.

Background

- 1.3. An ES was prepared for the Proposed Development’s DCO application and accordingly assessed cumulative effects as per the requirements within the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 as amended (hereafter referred to as the “EIA Regulations”). Additionally, the Planning Inspectorate Advice Note 17 (Planning Inspectorate, 2019) provides a clear and systematic approach to identify projects with potential cumulative effects which formed the basis of the cumulative effects assessment for the Proposed Development. A detailed description of the Cumulative Assessment methodology is found in **Chapter 2: EIA Methodology and Consultation** (document reference 6.1.2/ PS-051) of the ES.
- 1.4. A long list of cumulative projects was established using guidance from the Planning Inspectorate Advice Note 17 (Planning Inspectorate, 2019) and the four-stage approach. The long list was further refined to the potential cumulative effect project shortlist, presented and assessed in **Chapters 6 to 18** (document reference 6.1.6–6.1.18/PS-059, PS-061, PS-063, PS-065, APP-063, PS-067, PS-069, PS-071, PS-073, PS-075, APP-069, APP-070 and PS-076) of the ES.
- 1.5. The identification and collation of the cumulative long list and shortlist was finalised prior to the finalisation of the ES chapters and was up to date as of 31st December 2022.
- 1.6. Since the submission of the DCO Application and acceptance for Examination on the 13th March 2023, the status of some of the identified projects in the cumulative long list and shortlist has subsequently changed. Additionally, there are new applications which have been identified and submitted to the Relevant Planning Authority and PINS subsequent to the submission of the Heckington Fen Solar Park DCO Application.
- 1.7. Accordingly, this Technical Note sets out an update to the cumulative effect assessment undertaken in the submitted ES. Section 2- Methodology of this document sets out the updated cumulative shortlist of projects to be assessed against for potential cumulative effects in combination with Heckington Fen Solar Park, and the methodology applied to the cumulative effect assessment.
- 1.8. Additionally, this Technical Note has been prepared in response to the Examining Authority’s (ExA) first written question GEN 1.9 which states the following:



“Provide an updated version (or addendum) of the cumulative and in-combination effects assessment for each chapter of the ES and associated figures [APP-173, PS-084, PS-085], so that the additional proposals included in the report on the Interrelationship with Other NSIPs [REP1-021] and the findings are consistent with it.”

and, as agreed at the Issue Specific Hearing (ISH) 2 on the 20th September 2023, whereby the Examining Authority (ExA) set out that a cumulative effect assessment update would be submitted for Deadline 2 (7th November 2023).

- 1.9. Following on from ISH4 on 22nd November 2023, where cumulative sites were discussed,, North Kesteven District Council have requested a further 2No. TCPA applications be added to the cumulative long list. Both sites are within South Kesteven District Council administration area. The cumulative long list within Appendix 1 of this Technical Note includes these 2No. sites.

2. Methodology

- 2.1. As part of the EIA process, it considers cumulative effects of the Proposed Development in combination with the environmental effects of other existing and/or approved developments on sensitive receptors identified. The update to the cumulative effects assessment has drawn upon the method as set out within Advice Note 17 (Cumulative Effects Assessment), as published by PINS in August 2019. Advice Note 17 was relied upon for the drafting of the cumulative effects assessment for the submitted ES in the DCO application. Full details of the cumulative effects assessment methodology can be referred to in Section 2.13 of **Chapter 2- EIA Methodology and Consultation** (document reference 6.1.2/ PS-051).
- 2.2. The subsequent cumulative effect assessment undertaken by the technical team in the submitted ES in the DCO application (February 2023) can be located at the end of each technical chapter, **Chapters 6 to 18** (document reference 6.1.6-6.1.18). Accordingly, the updated cumulative effects assessment for all technical disciplines outlined in this document supersedes, unless otherwise stated, the cumulative effect assessment undertaken at the end of each technical ES chapter.
- 2.3. The initial step of updating the cumulative effect assessment for the ES has involved re-considering the long list of development within the appropriate Zone of Influence (Zoi) for each topic discipline, which forms the basis of the search area for the cumulative effects assessment. The methodology and principles of "Stage 1- Establishing the Long List", as per paragraph 2.13.9-2.13.16 of **Chapter 2- EIA Methodology and Consultation** (document reference 6.1.2/ PS-051) have been applied. Revision 4 of **Appendix 2.3- Cumulative Sites Long List and Shortlist** (document reference 6.3.2.3/ APP-175) is found at **Appendix 1** of this document and details the full longlist.
- 2.4. A shortlist of projects with the potential to have cumulative effects with the Proposed Development has been established in line with the methodology and principles of "Stage 2 – Identify the Shortlist", as per paragraph 2.13.17-2.13.18 of **Chapter 2- EIA Methodology and Consultation** (document reference 6.1.2/ PS-051). Revision 5 of **Appendix 2.3- Cumulative Sites Long List and Shortlist** (document reference 6.3.2.3/ APP-175) is found at **Appendix 1** of this document and details the shortlist. The shortlist is extracted and presented for ease in this section of this document, at **Table 2.1**.
- 2.5. The locations of the shortlisted cumulative projects in relation to the Proposed Development are shown in Revision 4 of **Figure 2.2a- Cumulative Plan - Shortlisted (Regional Context)** (document reference 6.2.2/ APP-079) and **Figure 2.2b- Cumulative Sites- Shortlisted (Local Context)** (document reference 6.2.2/ APP-080). These figures are found at **Appendix 2** of this document.
- 2.6. It should be noted, the revised shortlist to be assessed in this document has removed four projects that were previously assessed in the EIA submitted with the DCO application. The four sites, and justification for removal include:
 - Outer Dowsing Offshore Wind (EN010130)- this DCO project is for an offshore wind farm over 54km away from the Proposed Development. The project is at the Pre-Application stage and have produced a Preliminary Environmental Information Report for statutory consultation. The offsite grid connection route has been refined which is now 10.6km away from any part of the Order Limits (previously was 390m from the



Scoping Report information). Therefore, the project is deemed to be too far away for cumulative impacts.

- Land At Ewerby Thorpe (14/1034/EIASCR, North Kesteven District Council (NKDC)) – this Town and Country Planning Act (TCPA) project is for the erection of solar array with generating capacity of up to 28 MW. Only an EIA Screening Opinion Request had been submitted to NKDC. The land for this application has now been absorbed into the DCO application for Beacon Fen Energy Park (number 12 on shortlist) and will therefore not progress as a standalone application.
- Land to the North of White Cross Lane Solar Farm (19/0863/FUL –NKDC)– this is a TCPA project for a solar farm of 32MW, 8.3km away from the Proposed Development. The application was approved in October 2019 and the site is now fully operational (as confirmed by the developer). Therefore, this application has become part of the baseline conditions.
- Land South Of Gorse Lane (19/0060/FUL- NKDC) – this is a TCPA project for a solar farm of 20MW, 11km away from the Proposed Development. The application was approved in April 2019 and the site is now fully operational. Therefore, this application has become part of the baseline conditions.

2.7. At Deadline 5, this document was reviewed and updated in regard to the status of the list of projects included in Table 2.1 of this document, and the assessments of projects in Table 2.1 is updated where further public information is available. This also included a review of whether any new projects should be included in the assessment in this document. It was agreed with the Relevant Planning Authorities (RPAs) post Issue Specific Hearing 4 that any new projects that they wished to be included within ES Cumulative Assessment would be stated by Deadline 4. No new schemes have been identified for inclusion in Revision 3 of this document submitted at Deadline 4, or Revision 4 of this document submitted at Deadline 5.

2.8. Beacon Fen Energy Park and Springwell Solar Farm at the time of drafting Revision 4 of this document submitted at Deadline 5 commenced the Statutory Consultation process and a Preliminary Environmental Information Report (PEIR) for both projects are now available. **Figure 2.2a** and **Figure 2.2b** of Appendix 2 of this document have been updated to reflect any Order Limit changes of these schemes. The Applicant has taken the information and data presented in the Beacon Fen Energy Park and Springwell Solar Farm PEIRs as read and not stress-tested their findings.

2.9. At Deadline 5, a separate **ES Transport and Access Technical Note – Assessment of Triton Knoll Access Track, Doubletwelves Drove and Bicker Drove** (document reference ExA.ESATN-Access-D5.V1) has been submitted. Private negotiations between the Applicant and National Grid Energy Transmission (NGET) have progressed during the latter stages of Examination of the Proposed Development to enable a commitment of 100% of HGV construction vehicles associated with the full scope of works at the National Grid Bicker Fen Substation Extension (Works No. 6A/6B/6C) to use the Triton Knoll access track. In the event of an emergency or as a result of matters outside of NGET’s control (including, but not limited to, the Triton Knoll Access Track becoming blocked or impassable) the A52 Access Road, Ing Drove, Cowbridge Road, Bicker Drove (south of Vicarage Lane) and Vicarage Drove route will be used. An assessment of 100% of the Applicant’s and NGET’s HGV construction vehicles associated with the National Grid Bicker Fen Substation Extension (Works No. 6A/6B/6C) using the Triton Knoll Access Track routing is within the aforementioned document. The ability to utilise the Triton Knoll Access Track route is proposed as mitigation to address



concerns raised by a member of the local community and the Local MP; the commitment is secured through the oCTMP and Requirement 14 of the DCO. At the time of writing Revision 4 of this document, the principle of the Applicant and National Grid voluntarily using the Triton Knoll access track is agreed with Triton Knoll and the legal agreement to secure the land rights for use of the Triton Knoll access track is in the process of being finalised. Regardless, and in any event, the DCO provides the Applicant and National Grid with compulsory rights to be able to use the track. The mitigation measures proposed in the oCTMP at Deadline 5 can therefore be relied upon. It should, however, be noted that National Grid can only utilise this route because it sits within the DCO and it can only be used by National Grid for the purposes of constructing the Bicker Fen substation extension works in the Order (Work No. 6B and 6C). All other National Grid vehicles accessing the existing Bicker Fen substation for other operational or construction purposes (now and in the future) will not benefit from the necessary access rights to utilise the Triton Knoll access track and will access the National Grid substation from the existing routes.

- 2.10. Revision 4 of this document (ES Technical Note – Updated Information on Cumulative Projects) submitted at Deadline 5 considers the use of the Triton Knoll access track routing for National Grid Bicker Fen Substation Extension Works construction traffic and assesses the cumulative use of the A52 routing option for National Grid Bicker Fen Substation Extension Works construction traffic as a worst-case scenario. Beacon Fen Energy Park's PEIR suggests that they intend to route their construction traffic associated with National Grid Bicker Fen Substation through the A52 routing option, and therefore no cumulative effects are forecasted on the Triton Knoll Access Track. In turn the mitigation strategy of using Triton Knoll Access Track for 100% of traffic relating to the construction of the extension at National Grid Bicker Fen Substation removes a residual cumulative impact for routing along the A52.



Table 2.1- Cumulative Project Shortlist

	Name of Scheme	LPA	NSIP	Reference Number	Size of Scheme	Distance from Application Site
Tier 1 Sites						
1	Vicarage Drove Approved with conditions 17 th February 2022	BBC ¹	No	B/21/O443	49.9MW	c. 4.5km south of the Energy Park Site at its closest point but adjacent to the proposed extension to the National Grid Substation at Bicker Fen. To date construction has not commenced.
2	Land West of Cowbridge Road, Bicker Fen, Boston Approved with conditions 21 st July 2023	BBC SHC ²	No	B/22/O356 HO4-0849-22	49.9MW	c. 5.3km south of the Energy Park Site at its closest point to main site, but adjacent to the site boundary cable route. To date construction has not commenced.
3	Boston Alternative Energy Facility Granted Development Consent 6th July 2023	PINS- BBC	Yes	ENO10095	50MW + (NSIP)	c. 11.7km west of the Energy Park Site at its closest point. To date construction has not commenced.
4	Mallard Pass Solar Farm Application Submitted. Examination Closed November 2023	PINS - SKDC ³	Yes	ENO10127	50MW + (NSIP)	c.33.2km south-west of the Energy Park Site at its closest point.

¹ Boston Borough Council

² South Holland District Council

³ South Kesteven District Council

	Name of Scheme	LPA	NSIP	Reference Number	Size of Scheme	Distance from Application Site
5	Cottam Solar Project Application Submitted. Examination Commenced 5 th September 2023 & expected to close March 2024	PINS– BDC ⁴ & WLDC	Yes	ENO10133	50MW + (NSIP)	c. 43.4km north-west of the Energy Park Site at its closest point
6	Gate Burton Energy Park Application Submitted Examination Closed 4 th January 2024	PINS – BDC ³ & WLDC ⁵	Yes	ENO10131	50MW + (NSIP)	c.48.5km north-west of the Energy Park Site at its closest point
7	West Burton Solar Project Application Examination Commenced 8 th November 2024 and expected to close May 2024	PINS – BDC ³ & WLDC	Yes	ENO10132	50MW + (NSIP)	c.41.1km north-west of the Energy Park Site at its closest point
8	Land at Little Hale Fen Application submitted 15 th September 2023 and under determination	NKDC ⁶	No	23/1021/FUL	49.995MW	c. 4.6km north-east of the Energy Park Site at its closest point
9	Land North of Roman Bank and East of Middle	SHDC	No	HO9-0132-23	48MW	c. 19.7km southwest of Bicker Fen Substation

4 Bassetlaw District Council and West Lindsey District Council

5 West Lindsey District Council

6 North Kesteven District Council

	Name of Scheme	LPA	NSIP	Reference Number	Size of Scheme	Distance from Application Site
	Marsh Road at Red House Farm, Holbeach Bank Application submitted 7 th February 2023 and under determination					
17 ⁷	Land to the East and West of Mareham Lane, Sleaford Application submitted 28 th November 2023- awaiting determination.	NKDC	No	23/1419/FUL	49.9MW	c.10.5km east of the Heckington Fen Energy Park at its closest point
Tier 2 Sites						
10	Temple Oaks Renewable Energy Park Scoping Submitted and Response Published August 2022	PINS – SKDC, NKDC, BBC, SHC	Yes	ENO10126	50MW + (NSIP)	c.18.1 km south-west of the Energy Park Site at its closest point

⁷ Land to the East and West of Mareham Lane, Sleaford; this project is now a Tier 1 and removed as a Tier 3 project. The numbering of this project remains as '17' to maintain consistency in the use of the number in 'Section 3: Assessment of Cumulative Project' in this document.

	Name of Scheme	LPA	NSIP	Reference Number	Size of Scheme	Distance from Application Site
11	Tillbridge Solar Project Scoping Submitted and Response Published November 2022. Statutory Consultation from 30 May to 11 July 2023. Targeted Statutory Consultation being undertaken between 14 December 2023 and 25 January 2024.	PINS-BDC & WLDC	Yes	ENO10142	50MW + (NSIP)	c. 47.7km north-west of the Energy Park Site at its closest point
12	Beacon Fen Energy Park Scoping Submitted and Response Published May 2023 Statutory Consultation commenced on 22 January 2024.	PINS – NKDC & BBC	Yes	ENO10152	50MW + (NSIP)	c. 3.3km north west of the Energy Park Site. The Offsite Cable Route Corridor of this project and Heckington Fen’s intersect. The area of the possible crossing is south of the South Forty Foot Drain.
13	Springwell Solar Farm Scoping Submitted and Response Published May 2023. Statutory Consultation commenced on 11 January 2024.	PINS-NKDC	Yes	ENO10149	50MW + (NSIP)	c. 15.5km north west of the Heckington Fen Energy Park Site at its closest point
14	Fosse Green Energy Scoping Submitted and Response Published July 2023	PINS – NKDC	Yes	ENO10154	50MW + (NSIP)	c. 28.3km north west of the Heckington Fen Energy Park Site at its closest point



	Name of Scheme	LPA	NSIP	Reference Number	Size of Scheme	Distance from Application Site
15	One Earth Solar Farm Scoping Submitted and Response Published December 2023	PINS- NSDC ⁸ , BDC, WLDC	Yes	ENO10159	50MW + (NSIP)	c. 42.4km northwest of the Heckington Fen Energy Park Site at its closest point.
Tier 3 Sites						
16	Lincolnshire Reservoir Pre application	PINS - NKDC	Yes	WA010003	50 million cubic metre (m ³) reservoir and water treatment works	c.6.9km west of the Offsite Grid Route at its closest point.

3. Assessment of Cumulative Projects

- 3.1. Cumulative projects identified in the updated shortlist as assessed by the ES technical team are set out in the section headings below.

Landscape and Visual

Introduction

- 3.2. This section of this document provides an update to the assessment of the potential cumulative landscape and visual effects of the Proposed Development presented in **Chapter 6 – Landscape and Visual** (document reference 6.1.6/ PS-058 and PS-059), taking into account the additional cumulative sites as listed at **Table 2.1**.

Assessment Approach

- 3.3. The cumulative schemes at **Table 2.1** have been considered and the distance from the Proposed Development, their landscape context, spatial and visual relationship, and potential for inter-visibility with the Proposed Development have been analysed.
- 3.4. The methodology and approach outlined in **Chapter 6 – Landscape and Visual** (document reference 6.1.6/ PS-058 and PS-059) remain valid and unchanged.
- 3.5. Consistent with the approach and methodology presented at the beginning of Section 6.7 of **Chapter 6 – Landscape and Visual** (document reference 6.1.6/ PS-058 and PS-059), out of the 17 no. of shortlisted cumulative projects at **Table 2.1** only those within the 3km study area are considered relevant.
- 3.6. Three of those shortlisted cumulative schemes, located within the 3km cumulative study area, have already been assessed at Revision 2 of **Chapter 6 – Landscape and Visual** (document reference 6.1.6/ PS-058 and PS-059) – these are identified at Paragraphs 6.7.14.
- 3.7. Therefore, it follows that the proposed cumulative Beacon Fen Energy Park (Reference Number: EN010152) is the only additional cumulative scheme relevant for the purpose of this document.

Baseline Conditions

Landscape Character

- 3.8. The Beacon Fen Energy Park falls within Natural England National Character Areas (NCA) 44 Central Lincolnshire Vale and NCA 46 The Fens, thus in parts would be located within the same NCA 46 as the Proposed Development.
- 3.9. On the regional level, the Beacon Fen Energy Park project – particularly its main development area of solar modules, falls within the same host landscape: The Fens Regional Landscape

Character Type and the Fenland Landscape Character Sub-Area, as identified in the North Kesteven Landscape Character Assessment 2007. The cable route corridor of the Beacon Fen Energy Park falls within the same landscape as the Off-site Cable Route Corridor, and National Grid Bicker Fen Substation – the LT A Reclaimed Fen and more specifically its LCA A1 Holland Reclaimed Fen, as identified in the Landscape Character Assessment of Boston 2009.

- 3.10. With regard to the visual receptors those located within the north western and western study area, and in the southern part of the study area – West Low Grounds and Bicker Fen, and around the existing National Grid Bicker Fen Substation are relevant. The baseline presented in Revision 2 of **Chapter 6 – Landscape and Visual** (document reference 6.1.6/ PS-058 and PS-059) remains valid and appropriate.

Assessment of Likely Cumulative Effects

Construction Phase

- 3.11. There is the potential that the construction stage of the Proposed Development and Beacon Fen Energy Park would occur at the same time, with the estimated construction programme for the Beacon Fen Energy Park starting in 2026–2027 and running for up to 36 months (as per the Beacon Fen PEIR Chapter 2, paragraph 2.14.2) with the Proposed Development’s estimated construction programmed running from 2025–2027.

Landscape Elements – Construction Phase

- 3.12. It is noted that the currently proposed cable route for the Beacon Fen Energy Park, as stated within the PEIR for the project, partially overlaps with the Order Limits of the Proposed Development. The locations for potential overlap are within its Off-site Cable Route Corridor, within West Low Grounds and Bicker Fen, and around the existing National Grid Bicker Fen Substation. It is envisaged that the cable route for the Beacon Fen Energy Park will be detailed further in the DCO application (not currently available) – as confirmed in the Beacon Fen Energy Park PEIR Chapter 2 paragraph 2.3.4 and 2.3.5, similarly to the Proposed Development, thus will eventually be narrower than the currently proposed route. The Beacon Fen proposal is currently at Statutory Consultation with the DCO application yet to be submitted.
- 3.13. The Proposed Development would bring about some highly localised and very limited, and not significant, adverse effects upon the hedgerow and tree resource within the Order Limits, and in parts these would occur within the proposed Off-site Cable Route Corridor, and National Grid Bicker Fen Substation area. The cumulative scenario where the Beacon Fen Energy Park site is being constructed, may also result in some highly localised and very limited adverse effects upon the hedgerow and trees, or grassland resource within its currently proposed offsite cable route corridor. Taking the two cumulative schemes into consideration, the cumulative effects brought about by the proposed Off-site Cable Route Corridor, and National Grid Bicker Fen Substation would not be significant in cumulative terms, as the quantum of the vegetation removed as part of the Proposed Development is limited. Furthermore, the Proposed Development was assessed as bringing about major beneficial effects upon the hedgerow resource with moderate beneficial effects upon the tree resource and grassland within the Order Limits. Therefore, the direct cumulative change upon the landscape elements would not be significant and would not result in any cumulative adverse significant effects upon these and/or any other landscape elements associated within the Order Limits.

- 3.14. The construction of the bespoke access road for the main Beacon Fen solar park application site which is the preferred Access Route Corridor (Option 2) as outlined in their PEIR, and the construction of the solar modules, substation, and ancillary facilities within the Beacon Fen Energy Park site would not cause any cumulative effects, as the associated construction sites do not overlap with that of the Order Limits of the Proposed Development.

Landscape Character – Construction Phase

- 3.15. A temporary and reversible change upon the character of the host landscape: NCA 46 The Fens, and The Fens Regional Landscape Character Type and its associated Fenland Landscape Character Sub-Area would occur. The very limited to no inter-visibility between the Energy Park Site and this part of the study area, coupled with the distance of c. 3.3km between the Beacon Fen Energy Park and the Energy Park Site – i.e., located just outside of the defined Zone of Influence, ensures that such temporary and reversible effects would not be significant during the construction phase.
- 3.16. With regard to the grid connection, assuming that both construction phases would occur simultaneously, the temporary effects upon the host LT A Reclaimed Fen and more specifically its LCA A1 Holland Reclaimed Fen, as identified in the Landscape Character Assessment of Boston 2009, would be significant, yet highly localised and reversible. The significant effects would temporarily influence the character of the landscape during the construction stage of the Off-site Cable Route Corridor only, which is expected to be shorter than the overall 30–36-month long construction phases. Such significant effects are expected to be limited to area approx. 500m away from the Order Limits associated with the Off-site Cable Route Corridor and reversible. Beyond that distance any landscape character effects would not be significant.
- 3.17. Any potential cumulative effects upon the neighbouring national and regional levels landscapes are not expected to be significant.

Visual Effects – Construction Phase

- 3.18. There is the potential for significant cumulative yet temporary visual effects to occur during the construction stage of the offsite cable routes – assuming that the construction of the grid connection for the Proposed Development would occur during the same time as that of the cumulative Beacon Fen Energy Park. Road receptors are expected to gain direct and close range views of the construction activities as they travel through West Low Grounds and Bicker Fen, and around the existing National Grid Bicker Fen Substation. The degree of change is assessed as high, at most, with the effects major adverse and significant, temporary and reversible.
- 3.19. It is unlikely that the users of local Public Rights of Way located within the West Low Grounds,⁹ and the PROWs along the South Forty Foot Drain to the west and Public Footpath along Hammond Beck to the east and south east, would experience significant adverse effects. This is due to the distance and nature of views gained are heavily influenced by the existing National Grid Bicker Fen Substation, large scale pylons, and the existing large scale Bicker Fen

⁹ West Low Ground PROWs include PROWs along the South Forty Foot Drain, Swineshead Bridge to the north east, or near Bar Bridge to the east, and those within Bicker Fen and around the existing National Grid Bicker Fen Substation

Wind Farm. This conclusion is supported by the assessment presented in Section 6.7 Cumulative and In-Combination Effects of **Chapter 6 – Landscape and Visual** (document reference 6.1.6 Rev 3).

3.20. With regard to the cumulative views of the Beacon Fen Energy Park and the Energy Park Site during the construction phase, the analysis presented in **Chapter 6 – Landscape and Visual** (document reference 6.1.6 Rev 3) gives evidence of the very limited to no-intervisibility between the proposed Energy Park and the north western quadrant of the study area. For reference, it is worth reiterating that none of the medium range or distant viewpoints identified in the western or north western part of the study area have been judged to be affected to a significant degree – refer to Table 6.6 page 41 and 42 of **Chapter 6 – Landscape and Visual** (document reference 6.1.6 Rev 3). Therefore, it follows that whilst certain aspects of the construction phase may be perceptible by the receptors present in the intervening landscape – plant movement as they cross the surrounding landscape and views of construction equipment, such views would be distant, restricted, and temporary, thus such effects are not expected to be significant.

3.21. The above conclusion is also supported by the Beacon Fen Energy Park PEIR with the associated PEIR LVIA Chapter 6 identifying one preliminary viewpoint within South Kyme Fen, i.e., the landscape between the solar array and the Proposed Development. This preliminary viewpoint is Viewpoint 3 which is located to the south of South Kyme. Appendix 6.4 to the Beacon Fen Energy Park PEIR Chapter 6 has identified a low magnitude of change and negligible effects upon Viewpoint 3, during the construction stage. This is informative and confirms the Proposed Development’s assessment that there is no potential for any significant cumulative visual effects to occur during the construction phase.

Operational Phase

3.22. During the operational phase of the Proposed Development its Offsite Cable Route Corridor would be underground and would not be visible; this would not exert any significant landscape character or visual effects and therefore has no potential to create a cumulative effect with the proposed Beacon Fen Energy Park.

Landscape Elements – Operational Phase

3.23. It is predicted that after the implementation of the proposed planting at the Proposed Development there would be no further effects, including any cumulative effects, upon the landscape elements associated with the Order Limits during the operational phase of the Proposed Development. The proposed planting linked the Proposed Development will mature and this in turn would exert landscape character effects.

Landscape Character – Operational Phase

3.24. It is accepted that the addition of the Proposed Development would cause some long term albeit temporary change to the character of the local landscape in cumulative terms.

3.25. With regard to the host NCA 46 The Fens, its underlying agricultural character and key characteristics would prevail and would not be significantly changed.

3.26. With regard to the host Landscape Character Type: The Fens Regional and its associated Fenland Landscape Character Sub–Area, its north western part would contain two large scale solar energy development and ancillary infrastructure. The landscape pattern would change

and would comprise energy infrastructure located some distance apart (over 3km away from each other) set within the settled and working countryside. This change in itself would not be significant when taking into account the full extent of the host Fenland Landscape Character Sub-Area due to the distance between the cumulative schemes, scale of the landscape, big skies, foreshortened inter-visibility across this landscape, and intervening vegetation, that collectively serve to considerably reduce any adverse effects. It is anticipated, that similarly to the Proposed Development, the cumulative Beacon Fen Energy Park would cause some highly localised significant effects with its site itself and immediately around it, when judged in isolation. Given the distance between the two schemes the zone of significant landscape character effects is considered to be set sufficiently apart as not to cause any significant cumulative landscape character effects. For reference, LVIA Viewpoint 17 and Viewpoint 18 and Viewpoint 19 (document reference 6.2.6 / APP-143) along with Viewpoint 20 and Viewpoint 21 (document reference 6.2.6 / APP-144) have not been judged to be significantly affected by the Proposed Development when judged in isolation, thus there is no potential for any cumulative effects upon the perceptual or sensory aspect of the landscape character. It is worth reiterating that the residual landscape character effects of the Proposed Development upon the wider host landscape, when judged in isolation, were assessed as not being significant. Therefore, it follows that in cumulative terms any residual landscape character effects would not be significant either.

- 3.27. The above conclusion is supported by the Beacon Fen Energy Park PEIR LVIA Chapter 6, which states in its paragraph 6.9.25: ***“The cumulative landscape effects at the regional scale will not be significant due to the limited extent of the Schemes within the landscape of the NCA.”***

Visual Effects - Operational Phase

- 3.28. As stated above, there are a number of viewpoints located in the western and north western part of the study area, which can assist in analysing the potential cumulative visual effects, and whether such effects would be significant: LVIA Viewpoint 17 and Viewpoint 18 and Viewpoint 19 (document reference 6.2.6 / APP-143) along with Viewpoint 20 and Viewpoint 21 (document reference 6.2.6 / APP-144). None of the receptors associated with these locations have been assessed as subject to significant effects, when judged in isolation – refer to Table 6.8 page 48 and 49 of **Chapter 6 – Landscape and Visual** (document reference 6.1.6 Rev 3).
- 3.29. Given the distance, intervening vegetation, and in sequence nature of the views it is concluded that none of the above mentioned receptors would be subject to significant cumulative visual effects. It is informative to state that the Beacon Fen Energy Park PEIR LVIA Chapter 6 identifies a single viewpoint located to the south of South Kyme – Viewpoint 3. The PEIR Appendix 6.4 states that the degree of change at Year 0 and Year 15 (with the mitigation planting in place) would be ‘very low’, resulting in ‘negligible adverse’ effects, and such effects would not be significant.

Decommissioning Phase

- 3.30. Assuming that the decommissioning stage of the Offsite Cable Route Corridor overlaps with that of the decommissioning of the Beacon Fen Energy Park offsite cables, it is predicted that the same significant cumulative effects would be experienced as those assessed during the construction stage.

Mitigation and Enhancement

- 3.31. Given the already proposed mitigation planting associated with the Proposed Development, no further mitigation or enhancement measures are considered necessary.
- 3.32. The 'Mitigation and Enhancement' section 6.6 of Revision 2 of the **Chapter 6 – Landscape and Visual** (document reference 6.1.6 Rev 3) remain valid and unchanged.

Residual Cumulative Effects

- 3.33. There are no mitigation measures applicable to the proposed Off-site Cable Route Corridor that would reduce the established significant cumulative landscape character and visual (road receptors only) effects during the construction phase.
- 3.34. None of the residual effects experienced during the operational phase of the Proposed Development are expected to be significant given the above analysis.

Conclusion

- 3.35. In cumulative terms, the addition of the Proposed Development would cause **no significant cumulative effects** upon the character of the local landscape or visual receptors associated with this area.



Residential and Amenity

Introduction

- 3.36. **Chapter 7 – Residential Visual Amenity** (document reference 6.1.7/ PS-060 and PS-061) excluded cumulative assessment due to the distance between the cumulative developments and the fact that the primary focus of the analysis was the operational stage of the Energy Park and whether any significant effects would be overbearing.
- 3.37. Given the distance of over 3km between the Beacon Fen Energy Park and the Energy Park Site – i.e., located just outside of the defined Zone of Influence, none of the visual cumulative effects upon the nearby residential receptors are expected to be significant.
- 3.38. Therefore, no further assessment is progressed, and it is anticipated **no significant cumulative effects** upon identified residential receptors local to the Proposed Development.

Ecology and Ornithology

Introduction

3.39. This section of this document provides an update of the potential cumulative effects in combination with the Proposed Development in relation to Ecology and Ornithology. As there is no potential for cumulative effects where a proposed development has a negligible effect, this updated cumulative assessment only considers the 'moderate adverse' effect in relation to ground nesting birds (inc. Skylark and Yellow Wagtail) and any permanent loss of breeding habitat that may arise from the Proposed Development.

Assessment Approach

3.40. A review of all shortlisted cumulative projects as per **Table 2.1** of this document has been undertaken as part of this cumulative effects assessment update.

3.41. The revised list of projects has led to a change in the number of cumulative projects being assessed when compared to those listed in **Chapter 8. Ecology and Ornithology** (document reference 6.1.8/PS-063) which, at the time of submission identified **no significant cumulative negative effects**.

3.42. Following the submission of this report three sites, namely 'Land at Ewerby Thorpe', 'Land at White Cross Lane' and 'Land South of Gorse Lane' have now been removed from the assessment whilst the following five sites are now included in the assessment: 'Beacon Fen', 'Springwell', 'Fosse Green', 'One Earth' and 'Land to the East and West of Mareham Lane, Sleaford'. An explanation of why these 3No. sites have been removed from the cumulative list is provided in Section 2 of this report. The assessment of significant effects presented in **Chapter 8 Ecology and Ornithology** (document reference 6.1.8/PS-063) considered the impact of 'disturbance, injury or mortality during construction' upon breeding birds that may result from the proposed Solar Park development. The assessment presented in Chapter 8 concluded that this 'minor adverse' effect would not be significant. However, there is also a need to consider the potential for ground nesting birds (inc. skylark and yellow wagtail) to be impacted by the 'permanent loss of breeding habitat' resulting from the Solar Park both in isolation and cumulatively with other projects in the locality. The magnitude of impact and significant effect of the permanent loss of breeding bird habitat is set out in **Table 3.1** below.

Table 3.1: Summary of Magnitude of Impact and Significance of Effect

Receptor	Effect description	Value of Effect	Sensitivity/ Magnitude	Geographical Importance	Effect Category	Significant Effect?
Ground Nesting Birds (inc. skylark and yellow wagtail).	Permanent loss of breeding habitat	Long term / Direct	Medium/High	District	Moderate adverse	Yes

Baseline Conditions

- 3.43. The baseline conditions remain valid as per the 'Baseline Conditions' section 8.4 in the updated **Chapter 8: Ecology and Ornithology** (document reference 6.1.8/PS-063).

Assessment of Likely Cumulative Effects

- 3.44. The updated cumulative assessment has identified 17 developments (see Table 2.1) which could potentially result in cumulative impacts upon the regions biodiversity and nature conservation value.
- 3.45. Cumulative effects on biodiversity can occur when nearby development causes significant changes in the nature conservation value of the local ecology and in combination may cause cumulative effects such as,
- Removing the majority of a particular habitat in an area, or
 - Removing alternative foraging or breeding habitat for a particular species, or
 - Creating a new area of habitat which in combination may create new habitat that then allows a particular species to expand its range and the population to increase.
- 3.46. Calculations presented within the submitted ES Ecology and Ornithology Chapter (document reference 6.1.8/PS-063) identified how cumulative solar developments, when combined with Heckington Fen, would cover approximately 7,000ha of land, which is representative of a loss of approximately 1.5% of the farmland habitat in Lincolnshire. This loss could have impacts upon a reduced habitat resource for ground nesting birds including both Skylark and Yellow Wagtail, both of which have been recorded at Heckington Fen.
- 3.47. The projects identified in **Table 2.1** will all result in overall loss of arable farmland in the region and therefore have potential to reduce opportunities for nesting or foraging by ground nesting birds. Furthermore, several of the developments specifically identify ground nesting birds as requiring mitigation to ensure no impacts occur. These schemes include Beacon Fen, Springwell, Cottam, West Burton and Gate Burton DCOs. It is considered that in isolation the Proposed Development has incorporated a strategy of avoidance, retention and mitigation to ensure that impacts and effects upon the sites identified ecological receptors have been either minimised or fully avoided.
- 3.48. The following paragraphs assess the likelihood of a residual adverse cumulative effect on ecology or ornithology. Whilst not all of the projects identified in **Table 2.1** have mitigation proposals that are currently in the public domain as many are in at pre-app or scoping stages in the DCO process it is assumed for the purpose of this cumulative assessment that the need for sufficient mitigation has either been set out in existing, or will be provided in forthcoming, Environmental Statements and that these mitigation strategies will ensure each individual project would not result in residual adverse effects for ecology or ornithology.
- 3.49. Therefore, it is also assumed that no project listed would result in a residual adverse cumulative effect on ecology or ornithology. As such, it is considered that the proposed cumulative developments will also not have a significant adverse effect on the ecological receptor of ground nesting birds, or the habitat required by the ground nesting bird population.

Mitigation and Enhancement

- 3.50. No further mitigation and enhancement measures are anticipated, to those set out in the **Chapter 8: Ecology and Ornithology** (document reference 6.1.8/PS-063).

Residual Cumulative Effects

- 3.51. The residual cumulative effects of the Proposed Development upon ground nesting birds (inc. Skylark and Yellow Wagtail) remain as per the conclusions drawn in the 'Assessment of Likely Cumulative Effects' in the Ecology and Ornithology section of this document (paragraph 3.46-3.47) and in the **Chapter 8: Ecology and Ornithology** (document reference 6.1.8/PS-063).

Conclusion

- 3.52. In conclusion, **no significant cumulative effects** resulting from the assessment of the projects listed in **Table 2.1** of this document are anticipated during the construction, operation or decommissioning phases of the proposed development

Hydrology, Hydrogeology, Flood Risk and Drainage

Introduction

- 3.53. This section of the document provides an update regarding the potential cumulative effects in combination with the Proposed Development, in relation to Hydrology, Hydrogeology, Flood Risk and Drainage.

Assessment Approach

- 3.54. Consideration and a review of all shortlisted cumulative projects as per **Table 2.1** of this document has been undertaken as part of this cumulative effects assessment update. At Deadline 5, the Hydrology, Hydrogeology, Flood Risk and Drainage section was reviewed in light of further information available, principally the Beacon Fen Energy Park and Springwell Solar Farm PEIRs. The methodology set out in **Chapter 9: Hydrology, Hydrogeology, Flood Risk and Drainage** (document reference 6.1.9/PS-O64) applies.

Baseline Conditions

- 3.55. The description of baseline conditions remains valid, as set out in **Chapter 9: Hydrology, Hydrogeology, Flood Risk and Drainage** (document reference 6.1.9/PS-O64).

Assessment of Likely Cumulative Effects

- 3.56. Other projects will be subject to compliance with local and national and where relevant local policies and therefore required to demonstrate (amongst other matters) that flood risk is not increased, that the surface water drainage regime and surface water quality are not adversely affected and that groundwater aquifers are not affected. Without demonstrating compliance, DCO consent (or planning permission, as relevant) would not be granted and construction could not commence. On this basis, **no significant cumulative effects** resulting from the shortlisted projects in **Table 2.1** of this document are anticipated during the construction, operation or decommissioning phases.

Mitigation and Enhancement

- 3.57. No mitigation and enhancement measures are required in regard to cumulative effects.

Residual Cumulative Effects

- 3.58. There will be no residual cumulative effects in respect of Hydrology, Hydrogeology, Flood Risk and Drainage and the conclusions of **Chapter 9: Hydrology, Hydrogeology, Flood Risk and Drainage** (document reference 6.1.9/PS-O64) are unchanged.

Conclusion

- 3.59. In conclusion, it is anticipated there will be no cumulative effects with other projects resulting from the assessment of the shortlist of projects listed in **Table 2.1** of this document during the construction, operation or decommissioning phases. Therefore a '**not significant**' determination applies.

Cultural Heritage

Introduction

- 3.60. This section of this document provides an update of the potential cumulative effects for the Proposed Development, in relation to Cultural Heritage.

Assessment Approach

- 3.61. Consideration and a review of all shortlisted cumulative projects as per **Table 2.1** of this document has been undertaken as part of this cumulative effects assessment update.
- 3.62. The same 'Assessment Methodology' in **Chapter 10: Cultural Heritage** (document reference 6.1.10, APP-063) applies.

Baseline Conditions

- 3.63. The baseline conditions remain valid as per the 'Baseline Conditions' in **Chapter 10: Cultural Heritage** (document reference 6.1.10, Revision 2).

Assessment of Likely Cumulative Effects

- 3.64. Four projects that were considered in **Chapter 10: Cultural Heritage** (document reference 6.1.10, APP-063) are no longer shortlisted for cumulative assessment (see Section 2).
- 3.65. Six projects (No. 9, 12, 13, 14, 15, 17 of **Table 2.1**) in the updated cumulative shortlist were not previously considered in **Chapter 10: Cultural Heritage** (document reference 6.1.10, APP-063). Cumulative effects for both archaeology and built heritage are anticipated only in relation to Beacon Fen Energy Park (No. 12). Of the remaining schemes, none will have an effect on the archaeological or built heritage resource of the land being considered for the Proposed Development; and none are anticipated to have an effect on heritage assets considered sensitive to the Proposed Development through change to setting.
- 3.66. The Beacon Fen Energy Park Order Limits intersect with the Proposed Development's Order Limits within the sections of Offsite Grid Route Corridor. The Screened Zone of Theoretical Visibility models prepared for the Beacon Fen Energy Park and the Proposed Development display the extent of this overlap. The Beacon Fen PEIR, Chapter 8 (Cultural Heritage) also predicts indirect impacts for two of the same heritage receptors as predicted for the Proposed Development. This is discussed further below.
- 3.67. The 'Site Location Plan: Beacon Fen and Heckington Fen' drawing submitted within the PEIR for the Beacon Fen Energy Park illustrates the extent of Order Limits for both schemes. There is no intersection of the two Energy Parks, but the Beacon Fen Energy Park offsite cable route corridor crosses the following components within the Offsite Cable Route Corridor of the Heckington Fen Proposed Development:
- Access tracks to the east of South Forty Foot Drain;
 - A c.520m length/c.60m width of the cable route corridor near West Low Grounds; and

- All access tracks, cable route, and point of connection south of Bicker Drove and at the Bicker Fen Substation.
- 3.68. These areas have not yet been fully evaluated for either the Proposed Development or the Beacon Fen Energy Park. Within the PEIR for the Beacon Fen Energy Park is a Geophysical Survey Summary Report (Appendix 8.3) and Interim Trial Trenching Report (Appendix 8.4). These archaeological investigations have been completed only for the Beacon Fen Energy Park and not its offsite Cable Route.
- 3.69. No significant archaeological remains are anticipated within the Order Limits of the Heckington Fen Proposed Development on the basis of the results of the desk-based assessment and geophysical survey that have been undertaken. For the Proposed Development, the **Outline Written Scheme of Investigation – Mitigation** (document reference 7.14 / APP-245) makes provision for/commitment to mitigation should archaeological remains of interest be encountered by the forthcoming works. The residual effect is expected to be no more than minor harm to significance.
- 3.70. Should archaeological remains of interest be encountered by any future archaeological investigations carried out for the Beacon Fen Energy Park Cable Route, mitigation would similarly be required. It is not possible to attribute a residual effect at this stage, but if it were likely minor harm to significance, there would be a minor cumulative effect. The Beacon Fen Energy Park PEIR Chapter 8 (Cultural Heritage) is more conservative in identifying a Slight to Moderate Adverse cumulative effect (paragraph 8.9.9). But even with this slightly more conservative approach, the effect is Not Significant.
- 3.71. The Screened Zone of Theoretical Visibility for the Beacon Fen Energy Park provided as Figure 6.2 of the PEIR, indicates that the scheme would be visible from three heritage assets assessed for the Proposed Development in **Chapter 10: Cultural Heritage** (document reference 6.1.10, APP-O63):
- Roman Settlement of Holme House, a Scheduled Monument;
 - Kyme Tower, a Grade I Listed Building;
 - Mill Green Farmhouse, a non-designated heritage asset.
- 3.72. For the Proposed Development, minor harm to Mill Green Farmhouse has been identified – arising through change to landscape character of part of its historic agricultural landholding as experienced in designed views from the primary (south-facing) elevation of the asset across the northern part of the Energy Park. Meanwhile there appears to be no historical or direct visual association between Mill Green Farmhouse and the land proposed for Beacon Fen Energy Park. As such, it is considered that Beacon Fen does not contribute through setting to the significance of Mill Green Farmhouse, and so any intervisibility of Beacon Fen Energy Park and the asset would be largely incidental. No cumulative effect is anticipated.
- 3.73. For the Proposed Development, it is considered that neither the Energy Park site nor the Cable Route contribute through setting to the significance of the Roman Settlement. Although the Beacon Fen Energy Park Screened Zone of Theoretical Visibility model indicates that the Energy Park of Beacon Fen would be visible from this asset, the PEIR Chapter 8 (Cultural Heritage) does not identify the asset as a receptor. Regardless of its receptor status for the Beacon Fen site there are considered to be no possible cumulative effects on the setting of heritage assets with the Proposed Development as the assessment of effects from

the Proposed Development determined that there would be no harm has been anticipated from the Proposed Development.

- 3.74. For the Proposed Development, some visibility of the Energy Park is anticipated in certain views from and towards Kyme Tower. This is considered largely coincidental of the flat, low-lying landscape context. Given, too, the long-ranging nature of the views and the present-day landscape character, much has changed from when the tower was built and in use. It is therefore considered that the Energy Park does not contribute through setting to the significance of Kyme Tower.
- 3.75. Although no full setting assessment for Kyme Tower is yet publicly available for the Beacon Fen Energy Park, the Screened Zone of Theoretical Visibility model indicates there will be intervisibility of the Beacon Fen Energy Park and Kyme Tower. The PEIR Chapter 8 (Cultural Heritage) anticipates a Moderate Adverse Significance of Effect: *“The impact will be through a visual change in the wider landscape, including the key view to the west, towards Ewerby Thorpe. This view will see an alteration in the landscape from arable fields to containing energy infrastructure. Mitigation is proposed through landscaping and retention of the field formations.”*
- 3.76. This Moderate Adverse effect from the Beacon Fen energy park does not result in a cumulative effects with the Proposed Development as ‘no harm’ has been anticipated through the heritage assessment from the Proposed Development. This lack of cumulative impact on Kyme Tower is also recognised in the Beacon Fen Energy Park PEIR Chapter 8 (Cultural Heritage), in its assessment of cumulative effects with the Proposed Development (paragraph 8.9.10).
- 3.77. In summary, a minor cumulative effect (not significant) has been identified for archaeology in relation to the areas where the Beacon Fen Energy Park Cable Route intersects with the Offsite Cable Route Corridor for the Heckington Fen Proposed Development. No cumulative effects have been identified for archaeology or built heritage in relation to any scheme listed in **Table 2.1**.

Mitigation and Enhancement

- 3.78. No additional mitigation measures are proposed for the potential buried archaeological resource within the part of the Heckington Fen Offsite Cable Route Corridor shared by Beacon Fen Energy Park.
- 3.79. The ‘Mitigation’ section title in Chapter 10: Cultural Heritage (document reference 6.1.10, APP-063) remains valid and unchanged.

Residual Cumulative Effects

- 3.80. The residual cumulative effects remain as per the conclusions drawn in the ‘Assessment of Likely Cumulative Effects’ in the Cultural Heritage section of this document (paragraphs 3.64–3.76).

Conclusion



3.81. In conclusion, **no significant cumulative effects** resulting from the assessment of the projects listed in **Table 2.1** of this document are anticipated during the construction, operation or decommissioning phases of the Proposed Development.

Socio-Economics

Introduction

- 3.82. This section determines the likely cumulative socio-economic effects of the Proposed Development.
- 3.83. This assessment identifies the socio-economic baseline in relation to key economic and social variables (as is presented in Section 11.4 in ES **Chapter 11- Socio Economics** [document reference 6.1.11/PS-O67]). It then examines the potential effects that could occur, both direct and indirect, resulting from the Proposed Development and those Cumulative Schemes which are scoped into the assessment, during construction (short term effects), operation (long term effects), and decommissioning (short term effects).

Assessment Approach

- 3.84. Of the seventeen Cumulative Projects presented within **Table 2.1** Cumulative Projects Shortlist, a total of nine have been scoped into the assessment in respect of potential cumulative socio-economic effects. **Table 3.2** lists those Cumulative Projects that have been scoped into the assessment. The scope of the cumulative assessment also has considered the administrative area in which each of the cumulative scheme is located in comparison to the Proposed Development combined with the potential for overlap of effects within the context of the socio-economic assessment and scale of considered study area. As such, those schemes located within North Kesteven and Boston districts are scoped into the assessment; all others are scoped out.
- 3.85. It is noted that Cumulative Project no. 16 listed in **Table 2.1** of this report, Lincolnshire Reservoir, is located within NKDC. However, it has been scoped out due the fact that, following a desk-top search, there is currently no information publicly available regarding socio-economic effects or assumptions of a scheme of this nature and scale that could be used in the cumulative effects assessment. Therefore, any analysis would be extremely high level and not, in our professional opinion, considered sufficiently robust.
- 3.86. The cumulative assessment approach aims to enable a robust assessment whilst also presenting a realistic consideration of the cumulative effects at the local scale (North Kesteven and Boston districts). **Table 3.3** presents the assumptions on which the cumulative assessment in respect of socio-economic effects has been undertaken.
- 3.87. Where possible, definitive information regarding estimated jobs, obtained through a review of publicly available documentation on the National Infrastructure Planning website or local authority planning portals, whichever is applicable to each cumulative scheme. Where quantified information is not available, assumptions are made. Assumptions made are dependent on the potential effect in consideration with the aim of presenting a worst-case assessment of each potential effect.
- 3.88. In terms of assessment of significance, the approach remains as stated within ES Chapter 11 [PS-O67] (see paras 11.3.4 to 11.3.6, and inclusive of Tables 11.1, 11.2 and 11.3).

Table 3.2- Cumulative Project Shortlist – Scoped into Socio-Economic assessment

Site ref	Ti er	Name of Scheme
1	1	Vicarage Drove Approved with conditions 17 th February 2022. (B/21/0443)
2	1	Land West of Cowbridge Road, Bicker Fen, Boston Approved with conditions 21 st July 2023
3	1	Boston Alternative Energy Facility Granted Development Consent 6th July 2023
8	1	Land at Little Hale Fen Application submitted 15 th September 2023 and under determination
10	2	Temple Oaks Renewable Energy Park Scoping Submitted and Response Published August 2022
12	2	Beacon Fen Energy Park Scoping Submitted and Response Published May 2023. Statutory Consultation commenced on 22 January 2024.
13	2	Springwell Solar Farm Scoping Submitted and Response Published May 2023. Statutory Consultation commenced on 11 January 2024.
14	2	Fosse Green Energy Scoping Submitted and Response Published July 2023
17	1	Land to the East and West of Mareham Lane, Sleaford Application submitted 28th November 2023- awaiting determination.

Table 3.3- Socio-Economic assessment – cumulative effects assumptions

Scheme phase	Potential effect	Worst Case Assumptions
Construction	Employment	Unless information is publicly available regarding construction jobs generated by the cumulative scheme, it is assumed that 0 jobs are generated at the local scale to contribute to a worst-case scenario in respect of employment.
	Economic contribution	Unless information is publicly available regarding GVA generated by the construction phase of the cumulative scheme, it is assumed that £0 GVA is generated to contribute to a worst-case scenario in respect of economic contribution.
	Accommodation demand	In the absence of definitive publicly available information regarding each considered Cumulative Site, and based on a review of the number of construction workers generated as a result of a solar farms previously assessed by Pegasus, benchmarking process undertaken of similar scale schemes in the UK, as well as information provided by prospective construction contractors, an estimate of 1 job per MW has been used as the basis of assessment in respect of Accommodation demand. It is assumed that the construction phases align with that of the Proposed Development, and the number of workers requiring accommodation during the construction phase of the Cumulative Scheme also aligns with those needing accommodation during construction phase of the Proposed Development, i.e., up to 75% workers seeking accommodation in either Serviced or Non-Serviced Accommodation. This enables a worst-case assessment to be undertaken in terms of Accommodation Demand.

Scheme phase	Potential effect	Worst Case Assumptions
Operation	Employment	Unless information is publicly available regarding operational jobs generated by the cumulative scheme, it is assumed that 0 jobs are generated at the local scale to contribute to a worst-case scenario in respect of employment.
	Economic contribution	Unless information is publicly available regarding GVA generated by the operational phase of the cumulative scheme, it is assumed that £0 GVA is generated to contribute to a worst-case scenario in respect of economic contribution.
	Business rates	Unless information is publicly available regarding business rates generated by the operational phase of the cumulative projects, it is assumed that £0 is generated to contribute to a worst-case scenario.
Decommissioning	Employment	Unless information is publicly available regarding decommissioning jobs generated by the cumulative scheme, it is assumed that 0 jobs are generated at the local scale to contribute to a worst-case scenario in respect of employment.
	Economic contribution	Unless information is publicly available regarding GVA generated by the decommissioning phase of the cumulative scheme, it is assumed that £0 GVA is generated to contribute to a worst-case scenario in respect of economic contribution.
	Accommodation demand	In the absence of definitive publicly available information regarding each considered Cumulative Site, and based on a review of the number of decommissioning workers generated as a result of a solar farms previously assessed by Pegasus, benchmarking process undertaken of similar scale schemes in the UK, as well as information provided by prospective construction contractors and the Applicant, an estimate of 0.5 FTE jobs

Scheme phase	Potential effect	Worst Case Assumptions
		<p>per MW has been used as the basis of assessment in respect of Accommodation demand during decommissioning. It is assumed that the decommissioning phases align with that of the Proposed Development, and the number of workers requiring accommodation during the construction phase of the Cumulative Scheme also aligns with those needing accommodation during decommissioning phase of the Proposed Development, i.e., up to 75% workers seeking accommodation in either Serviced or Non-Serviced Accommodation. This enables a worst case assessment to be undertaken in terms of Accommodation Demand.</p>

Baseline Conditions

- 3.89. For information on baseline conditions please refer to Section 11.4 in ES Chapter 11 [PS-067].

Assessment of Likely Cumulative Effects

Significance of the Cumulative Construction Phase Effects

Employment

- 3.90. Estimated jobs created as a result of the construction phase are publicly available for four of the Cumulative Schemes located within North Kesteven administrative area: Boston Alternative Energy Facility estimated to generate between 250–300 (250 is used because it is the lowest estimated number of jobs and therefore presents a worst case scenario), Temple Oaks Renewable Energy Park estimated to generate 126 on site construction phase jobs, Beacon Fen Energy Park estimated to generate 242 total net construction jobs¹⁰, and Springwell Solar Farm is estimated to generate 600 construction jobs¹¹. An assumption is made regarding the remaining Cumulative Schemes located within North Kesteven that 0 jobs are generated at the local scale so as to contribute a worst-case scenario in respect of cumulative employment effects during the construction phase. The known 376 on-site

¹⁰ This information aligns with latest publicly available information relating to the statutory consultation which started on 22 January 2024 in respect of Beacon Fen Energy Park.

¹¹ This information aligns with the latest publicly available information in relation to the statutory consultation which started on 11 January 2024 regarding Springwell Solar Farm.

construction phase jobs generated by two of the cumulative schemes combined with the number of on-site construction phase jobs generated by the Proposed Development is 1,654.

3.91. The significance of cumulative construction phase effect in respect of employment is assessed as follows:

- The sensitivity of the receptor (employment in construction and other sectors of the economy in North Kesteven and Boston) is assessed as being **medium**, in line with the criteria set out in Table 11.1. Construction employment represents around 7% of total employment in North Kesteven and 3.7% in Boston.
- The magnitude of the impact is assessed as **high**, in line with the criteria in Table 11.2. A total of 1,654 on-site construction phase jobs are created by the Proposed Development (436 jobs) and Cumulative Schemes for which estimated job numbers are publicly available (1,218). This represents a considerable increase in the number of new employment opportunities for local residents, for a temporary period of time.
- The significance of the temporary cumulative effect in respect of employment is therefore considered to be **major beneficial** in North Kesteven and Boston, which is **significant** in EIA terms.

Contribution to Economic Output

3.92. Unless information is publicly available regarding GVA generated by the construction phase of the cumulative scheme, it is assumed that £0 GVA is generated to contribute to a worst-case scenario in respect of economic contribution. In addition to the Proposed Development, there is publicly available information regarding GVA relating to Beacon Fen Energy Park (PEIR published January 2024 for purposes of statutory consultation). However, due to slight differences in approach and applied study area, inclusion of any GVA generated by Beacon Fen Energy Park is not included so as to present a worst case cumulative assessment. As such, it is assumed that total GVA supported by all cumulative schemes totals at least £190.6million, equivalent to £76.2million per annum.

3.93. The significance of cumulative construction phase effect in respect of contribution to economic output is assessed as follows:

- The sensitivity of the receptor in North Kesteven and Boston is assessed as being **medium**, in line with the criteria set out in Table 11.1. GVA in the North Kesteven construction sector increased 26% between 2010 and 2020 and 83.3% in Boston in the same time period.
- The magnitude of the impact is assessed as **high**, in line with the criteria in Table 11.2. The £190.6million in GVA generated over the 30-month build timeframe (current prices), equivalent to £76.2million per annum. This would cause a large uplift in construction GVA in both North Kesteven and Boston (North Kesteven annual construction GVA amounts to £243million, therefore a 31.4% uplift is estimated, and Boston construction GVA amounts to £61million, therefore a 125% uplift is estimated).
- The significance of the temporary cumulative effect in respect of economic output is therefore considered to be **major beneficial** in North Kesteven and Boston, which is **significant** in EIA terms.

Accommodation Demand

- 3.94. The approach to Accommodation Demand applied within ES Chapter 11 [PS-067] for the Proposed Development in isolation is applied in respect of cumulative effects assessment. It is estimated that, based on Ready Reckoners in respect of Leakage defined by the Additionality Guide (2014), between 50% and 75% of benefits of the construction period will go to people living outside of the local area when considering baseline characteristics of North Kesteven and Boston economies. By association, it can be estimated that between 50% and 75% of construction workers will need to be sourced from outside of the local area. For a worst-case scenario, it is assumed that 75% of workers will be sourced from outside the local area and will require accommodation for the duration of the construction period.
- 3.95. For those schemes where estimated construction workers are publicly available (Proposed Development 436 workers, Boston Alternative Energy Facility 250 workers, and Temple Oaks Renewable Energy Park 126 workers), it is possible to estimate the proportion of the workers that will require accommodation based on the assumed 75% Leakage (Proposed Development 327 workers, Boston Alternative Energy Facility 188 workers, and Temple Oaks Renewable Energy Park 95 workers).
- 3.96. Assumptions regarding all other Cumulative Projects scoped into the assessment are applied as per **Table 3.3** earlier in this section to ascertain the potential worst-case scenario in terms of the number of workers requiring accommodation during the construction period.
- 3.97. **Table 3.4** summarises the assumptions made regarding FTE jobs and proportion needing accommodation during the construction phase for the Proposed Development and all Cumulative Projects scoped into the assessment.

Table 3.4: Cumulative assessment assumptions – Accommodation demand during construction phase

Cumulative Scheme	Proposal summary	Number of FTE jobs generated during construction (Publicly known / Estimated)	Assumed number of workers needing accommodation during construction phase
Proposed Development – Heckington Fen (data publicly known)	See ES Chapter 4 for full detail	436	327
Vicarage Drove (data estimated)	49.9MW solar farm	50	38
Land West of Cowbridge Road, Bicker	49.9MW solar farm	50	38

Fen, Boston (data estimated)			
Boston Alternative Energy Facility (data publicly known)	DCO energy from waste facility	250	188
Land at Little Hale Fen (data estimated)	49.9 MW solar farm	50	38
Temple Oaks Renewable Energy Park (data publicly known)	250MW Solar Farm	126	95
Beacon Fen Energy Park (data publicly known) ¹²	400MW solar farm	242	242
Springwell Solar Farm (data publicly known) ¹³	800MW solar farm	600	600
Fosse Green Energy (data estimated)	320MW solar farm	320	240

12 The estimated number of construction workers needing accommodation for Beacon Fen Energy Park is assumed to be the total FTE jobs as is presented in the Beacon Fen Energy Park PEIR (January 2024) now publicly available. A detailed assessment of worker accommodation and the potential impacts is not yet available. As such, utilising the total net FTE jobs enables a worst case assessment to be presented.

13 The estimated number of construction workers needing accommodation for Springwell Solar Farm is assumed to be the total FTE jobs as is presented in the Springwell Solar Farm PEIR (January 2024) now publicly available. A detailed assessment of worker accommodation and the potential impacts is not yet available. As such, utilising the total net FTE jobs enables a worst case assessment to be presented.

Land to the East and West of Mareham Lane (data estimated)	49.9MW solar farm	50 ¹⁴	38
Total		2,174	1,844

¹⁴ The Construction Traffic Management Plan (1st December 2023) for Land to the East and West of Mareham Lane (NKDC reference: 23/1419/FUL), lists a 'maximum of up to 40 construction workers are anticipated to be on site during peak times during the construction period'. The current assessment uses an estimate of 50 construction workers, and therefore a worst case scenario is assessed. The figure is not updated to 40 workers as the change will not affect the conclusions drawn for the cumulative assessment of relevant projects in regard to socio-economics.

- 3.98. **Table 3.4** indicates that, based on an assumed 75% Leakage, there is estimated to be 1,844 construction workers requiring accommodation in Serviced and Non-Serviced Accommodation in North Kesteven and Boston as a result of the Proposed Development and Cumulative Projects.
- 3.99. **Table 3.5** shows that, following accommodation of the 1,844 construction workers, in addition to the assumed occupancy rate of Serviced and Non-Serviced Accommodation, there would be surplus capacity in five of the twelve months of the year in North Kesteven, with deficits for the other seven months.
- 3.100. **Table 3.6** shows accommodation of all 1,844 construction workers within the available Serviced and Non-Serviced Accommodation bedspaces within Boston, in addition to assumed occupancy. The table shows that there would be surplus capacity in three of the twelve months of the year, with deficits for the other nine months.
- 3.101. **Table 3.7** shows the Boston and North Kesteven available Serviced and Non-Serviced Accommodation bedspaces combined, following accommodation of the 1,844 construction workers, and applying assumed occupancy rates. The table shows that there would be at least some surplus capacity in all months of the year.
- 3.102. A key consideration in assessing the cumulative impact of a Proposed Development is considering the likelihood of this effect occurring within a cumulative timescale. The likelihood of cumulative schemes gaining DCO consent and secondly the likelihood that their construction, operation and decommissioning timescales will overlap with the Proposed Development are all valid considerations when determining the *likelihood of effect*. As shown within **Table 3.2**, 5No. of the schemes considered within this socio-economic assessment are Tier 2 or Tier 3 projects. The projected timescales which have been used to complete this cumulative assessment are taken from the publicly available documents.
- 3.103. None of the Tier 2/3 schemes have yet been submitted to the Planning Inspectorate or (for the case of TCPA applications) the Local Planning Authority for determination. As a result, no assessment of these schemes, both technically and against policy, can take place to determine the likelihood of them gaining consent. In addition, none of the applicants have any legal obligation to comply with the timescales they are currently presenting within the public domain as all are in the pre-submission phases of development. It is the professional judgement of the socio-economic technical experts that the likelihood of effect of these Tier 2 and 3 schemes being submitted, consented, built, operated and decommissioned in the same timescales as the Heckington Fen development are very low.
- 3.104. This likelihood of effect has been taken into account when determining the magnitude of impact of the cumulative impact of the construction phases.
- 3.105. Considering the above, the significance of construction phase accommodation demand effects is assessed as follows:
- The sensitivity of the receptor in North Kesteven and Boston is assessed as being **medium**, in line with the criteria set out in Table 11.1 of ES Chapter 11 [PS-O67]. Tourism is a growing sector in both of the Districts and wider area.
 - The magnitude of the impact is assessed as **low**, in line with the criteria in Table 11.2 of ES Chapter 11 [PS-O67]. There will be a change in terms of the use of the existing amenities. This is particularly noted when considering the potential worst-case

scenario of all 1,899 workers requiring accommodation within either North Kesteven or Boston district alone, as opposed to the demand being split between the two districts. When considering the combined effect of demand being spread between both North Kesteven and Boston, all twelve months are estimated to have at least some surplus capacity in terms of accommodation bedspaces. When considering the magnitude of impact, consideration has to be given to both the possible impacts of cumulative development but also the likelihood of effect of these cumulative impacts occurring. As can be seen from the paragraphs above the likelihood of effects from these possible impacts occurring at the same time as the construction phase of the Proposed Development are very low.

- The significance of the temporary effect is therefore considered to be **minor to moderate adverse** in North Kesteven and Boston, which is **not significant** in EIA terms.

3.106. In reality, the assessment shown here in respect of cumulative accommodation demand during the construction phase is extremely worst case, and the realistic outlook is likely to be limited in comparison, so much as to avoid any deficit in terms of available bedspaces as a result of accommodating construction workers for the Proposed Development and considered Cumulative Projects.

3.107. The key reasons for this are as follows:

- The number of workers is estimated based on absolute worst-case assumptions. Furthermore, in respect of the Proposed Development in isolation, from a worst-case perspective we are assuming that 436 workers would be required for the whole 30-month construction period, when in reality a peak of 400 on-site workers is likely for a period of up to 6 months, and no more than 150 workers for the remaining 24 months. This is likely to be a similar pattern between peak and non-peak construction workers for the other schemes scoped into the assessment.
- The assumed Leakage of 75% of workers being outsourced from the local districts is again absolute worst case. An Outline Supply Chain, Employment and Skills Plan (document reference 7.12 / APP-O67) has been prepared and submitted with the application. The final detailed (OSCESP) will endeavor to ensure that the contractor will source as many workers as possible from within North Kesteven and Boston districts.
- It is unlikely that Town and County Planning Authority (TCPA) sized schemes would need to source 75% of their workers from outside the local area. Therefore, although an absolute worst-case scenario is assessed, it is more realistic to expect that a lower proportion of workers would be sourced from outside the local area and therefore fewer workers would require accommodation during the construction periods.
- It is highly unlikely that workers would be accommodated in just one of the districts. The more realistic outlook is that accommodation requirements of workers would be spread between the two districts of North Kesteven and Boston.
- It is highly unlikely that the construction programme for all of the nine Cumulative Projects and the Proposed Development will exactly align and therefore the realistic demand on accommodation is not expected to be as pronounced as is shown in **Tables 3.5 – 3.7** and as described in paras 3.98 – 3.103 of this report.



Table 3. 5: Assumed occupancy of Serviced and Non-Serviced Accommodation including housing of workers during the construction phase for North Kesteven (based on 2022 data)

	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Total Serviced and Non-Serviced Accommodation bedspaces	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455
Actual number of bedspaces occupied	1,009	1,165	1,509	1,852	1,975	2,144	2,319	2,325	2,079	1,749	1,405	1,068
Construction workers requiring accommodation	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844
Occupancy rate inclusive of construction workers	0.83	0.87	0.97	1.07	1.11	1.15	1.20	1.21	1.14	1.04	0.94	0.84
Actual number of bedspaces occupied	2,853	3,009	3,353	3,696	3,819	3,988	4,163	4,169	3,923	3,593	3,249	2,912
Available bedspaces following housing of accommodation workers	602	446	102	-241	-364	-533	-708	-714	-468	-138	206	543



Table 3.6: Assumed occupancy of Serviced and Non-Serviced Accommodation including housing of workers during the construction phase for Boston (based on 2022 data)

	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Total Serviced and Non-Serviced Accommodation bedspaces	2,588	2,588	2,588	2,588	2,588	2,588	2,588	2,588	2,588	2,588	2,588	2,588
Actual number of bedspaces occupied	546	635	991	1,347	1,461	1,606	1,791	1,833	1,528	1,203	847	583
Construction workers requiring accommodation	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844
Occupancy rate inclusive of construction workers	0.92	0.96	1.10	1.23	1.28	1.33	1.40	1.42	1.30	1.18	1.04	0.94
Actual number of bedspaces occupied	2,390	2,479	2,835	3,191	3,305	3,450	3,635	3,677	3,372	3,047	2,691	2,427
Available bedspaces following housing of accommodation workers	198	109	-247	-603	-717	-862	-1,047	-1,089	-784	-459	-103	161



Table 3.7: Assumed occupancy of Serviced and Non-Serviced Accommodation including housing of workers during the construction phase (based on North Kesteven 2019 data and Boston 2022 data)

	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Total Serviced and Non-Serviced Accommodation bedspaces	6,043	6,043	6,043	6,043	6,043	6,043	6,043	6,043	6,043	6,043	6,043	6,043
Actual number of bedspaces occupied	1,555	1,800	2,500	3,199	3,436	3,750	4,110	4,158	3,608	2,952	2,252	1,650
Construction workers requiring accommodation	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844	1,844
Occupancy rate inclusive of construction workers	0.56	0.60	0.72	0.83	0.87	0.93	0.99	0.99	0.90	0.79	0.68	0.58
Actual number of bedspaces occupied	3,399	3,644	4,344	5,043	5,280	5,594	5,954	6,002	5,452	4,796	4,096	3,494
Available bedspaces following housing of accommodation workers	2,644	2,399	1,699	1,000	763	449	89	41	591	1,247	1,947	2,549

Significance of the Cumulative Operational Phase Effects

Employment Impact

- 3.108. There are only three schemes for which information regarding operational jobs is available: the Proposed Development (6.5 jobs), Land West of Cowbridge Road (3.5 jobs), Boston Alternative Energy Facility (72 jobs), and Beacon Fen Energy Park (at least 15 FTE jobs). Therefore, based on this available information, it is estimated that there will be 97 operational jobs generated and retained within the North Kesteven and Boston workforce.
- 3.109. There is no publicly available information regarding operational jobs for the other Cumulative Schemes located within North Kesteven. As such, in order to assess a worst-case scenario, no additional operational jobs at the local scale are assumed related to any other Cumulative Projects beyond those referred to in para 3.61.
- 3.110. The significance of the cumulative operational phase effect in respect of employment has been assessed as follows:
- The sensitivity of the receptor (labour market of North Kesteven and Boston) is considered to be **medium**, in line with the criteria set out in Table 11.1 of ES Chapter 11 [PS-067].
 - The magnitude of the impact is identified as being **low**, in line with the criteria in Table 11.2 of ES Chapter 11 [PS-067]. The number of on-site jobs created in the operational phase (97) would represent a small increase in current employment levels in North Kesteven and Boston, but the employment supported by the operational phase will be long-term.
 - The significance of the cumulative operational effect in terms of employment is therefore considered to be **minor to moderate beneficial** in North Kesteven and Boston, which is **not significant** in EIA terms.

Contribution to Economic Output

- 3.111. No information regarding economic contribution during the operational phase of any of the Cumulative Schemes within North Kesteven is publicly available at this time. Therefore, in order to assess a worst-case scenario, it is assumed that the GVA generated for North Kesteven and Boston by the Proposed Development and Cumulative Projects is that which is calculated for the Proposed Development in isolation. As such, as an absolute worst case, GVA is estimated to be around £815,137 per annum, allowing for multiplier effects¹⁵, and over the 40-year operational lifespan of the Proposed Development the GVA generated is estimated to be around £18.1million (present value¹⁶). In reality, the contribution to economic output is expected to be far greater than this as a result of the Proposed Development and Cumulative Projects.

¹⁵ For the GVA estimate, the same multipliers used are the same as the construction GVA multipliers outlined above.

¹⁶ Where future benefits are calculated over a longer timeframe, they have been discounted to produce a present value. This is the discounted value of a stream of either future costs or benefits. A standard discount rate is used to convert all costs and benefits to present values. Using the Treasury's Green Book, the recommended discount rate is 3.5% up to 30 year and 3% thereafter.

3.112. The significance of the operational phase effect in respect of contribution to economic output has been assessed as follows:

- The sensitivity of the receptor in North Kesteven and Boston is considered to be **medium**, in line with the criteria set out in Table 11.1 of ES Chapter 11 [PS-067].
- The magnitude of the impact is identified as being **low**, in line with the criteria in Table 11.2 of ES Chapter 11 [PS-067]. The annual GVA generated by the Proposed Development once operational of £815,137 and £18.1million (present value) over the 40-year operational lifespan. This would cause an uplift in GVA in both North Kesteven and Boston (North Kesteven annual GVA amounts to £2.8billion, therefore a 0.03% uplift is estimated, and Boston GVA amounts to £1.5billion, therefore a 0.06% uplift is estimated).
- The significance of the operational effect is therefore considered to be **minor to moderate beneficial** in North Kesteven and Boston, which is **not significant** in EIA terms.

Business Rates

3.113. No information regarding business rates during the operational phase of any of the Cumulative Schemes within North Kesteven or Boston is publicly available at this time. Therefore, in order to assess a worst-case scenario, it is assumed that the business rates generated for North Kesteven and Boston by the Proposed Development and Cumulative Projects is that which is calculated for the Proposed Development in isolation. It is estimated that the solar project element of the proposed scheme could generate up to £1.3million per annum in business rates¹⁷. Over the intended 40-year lifespan of the scheme, business rates generated could total around £29.3million (present value).

3.114. The significance of the operational phase effect in respect of business rates has been assessed as follows:

- The sensitivity of the receptor in North Kesteven is considered to be **medium**, in line with the criteria set out in Table 11.1 of ES Chapter 11 [PS-067].
- The magnitude of the impact is identified as being **medium**, in line with the criteria in Table 11.2 of ES Chapter 11 [PS-067]. Given agricultural land and buildings are exempt from business rates, and on the basis that the much of the land on which the Cumulative Projects are to be constructed are arable agricultural land whereby no business rates revenue would be generated, the additional revenue would represent an uplift on current activities.
- The significance of the operational effect is therefore considered to be **moderate beneficial** in North Kesteven, which is **significant** in EIA terms.

¹⁷ Based on information on price per MW of £6,450 in 2017 sourced from Photovoltaic Memorandum of Agreement.



Significance of the Cumulative Decommissioning Phase Effects

Employment

- 3.115. Economic benefits will arise through the provision of temporary jobs during the decommissioning phase in respect of the Proposed Development and Cumulative Schemes.
- 3.116. It is estimated that there will be around 218 workers on-site during the decommissioning phase for the Proposed Development, 250–300 for Boston Alternative Energy Facility (250 used because it is the lowest estimated number of jobs and therefore presents a worst case), assumed to be 126 for Temple Oaks Renewable Energy Park, assumed to be 242 for Beacon Fen Energy Park and up to 600 for Springwell Solar Farm. The number of decommissioning jobs for the other Cumulative Projects. Therefore, an assumption of 0 jobs for these schemes is used as a worst case.
- 3.117. The estimated total decommissioning jobs generated by the Proposed Development and cumulative schemes is 1,436 direct jobs on-site during the 18-month decommissioning phase.
- 3.118. As such, the significance of cumulative decommissioning phase effect in respect of employment is assessed as follows:
- The sensitivity of the receptor (employment in construction (assumed most relevant in respect of decommissioning workforce) and other sectors of the economy in North Kesteven and Boston) is assessed as being **medium**, in line with the criteria set out in Table 11.1 of ES Chapter 11 [PS-O67].
 - The magnitude of the impact is assessed as **high**, in line with the criteria in Table 11.2 of ES Chapter 11 [PS-O67]. The 1,436 jobs assumed to be supported by the decommissioning phase represent a considerable increase in the number of new employment opportunities for local residents, for a temporary period of time.
 - The significance of the temporary cumulative effect in respect of employment is therefore considered to be **major beneficial** in North Kesteven and Boston, which is **significant** in EIA terms.

Contribution to Economic Output

- 3.119. Similarly, to the Construction phase, information regarding the economic contribution of the decommissioning phase is only available for the Proposed Development. Therefore, to follow the same worst-case scenario it is assumed that the economic contribution for the decommissioning phase of the Proposed Development in isolation is the total economic contribution. The overall GVA impact associated with the Decommissioning phase is estimated at £57.1million over the 18-month decommissioning phase, equivalent to £38.1million per annum.
- 3.120. As such, the significance of decommissioning phase effect in respect of contribution to economic output is assessed as follows:
- The sensitivity of the receptor in North Kesteven and Boston is assessed as being **medium**, in line with the criteria set out in Table 11.1 of ES Chapter 11 [PS-O67].

- The magnitude of the impact is assessed as **medium**, in line with the criteria in Table 11.2 of ES Chapter 11 [PS-O67]. The £57.1million over the 18-month decommissioning timeframe (current prices), equivalent to £38.1million per annum. This would cause a moderate uplift in (construction-related) GVA in both North Kesteven and Boston (North Kesteven annual construction GVA amounts to £243million, therefore a 15.7% uplift is estimated, and Boston construction GVA amounts to £61million, therefore a 62.5% uplift is estimated).
- The significance of the temporary cumulative effect in respect of contribution to economic output is therefore considered to be **moderate beneficial** in North Kesteven and Boston, which is **significant** in EIA terms.

Accommodation Demand

- 3.121. The approach to Accommodation Demand applied within ES Chapter 11 [PS-O67] for the Proposed Development in isolation is applied in respect of cumulative effects assessment. It is estimated that, based on Ready Reckoners in respect of Leakage defined by the Additionality Guide (2014), between 50% and 75% of benefits of the decommissioning period will go to people living outside of the local area when considering baseline characteristics of North Kesteven and Boston economies. By association, it can be estimated that between 50% and 75% of decommissioning workers will need to be sourced from outside of the local area. For a worst-case scenario, it is assumed that 75% of workers will be sourced from outside the local area and will require accommodation for the duration of the decommissioning period.
- 3.122. For those projects where estimated decommissioning workers are publicly available, or otherwise construction workers are available and assumed to be applicable to apply to the decommissioning phase also, it is possible to estimate the proportion of the workers that will require accommodation based on the assumed 75% Leakage. As such, those projects where number of workers are known include the Proposed Development (218 workers), Boston Alternative Energy Facility (250 workers), and Temple Oaks Renewable Energy Park (126 workers), and following application of 75% Leakage the number of workers needed accommodating during the decommissioning phase relating to these Projects is estimated to be 447 (Proposed Development 164 workers, Boston Alternative Energy Facility 188 workers, and Temple Oaks Renewable Energy Park 95 workers). The number of workers potentially required during decommissioning phase of Springwell Solar Farm is referred to in the PEIR documentation dated January 2024 (up to 600 used as worst case assumption).
- 3.123. Assumptions regarding all other Cumulative Projects scoped into the assessment are applied as per Table 3.2 earlier in this section to ascertain the potential worst-case scenario in terms of the number of workers requiring accommodation during the construction period.
- 3.124. It is noted that those Cumulative Projects whose publicly available information indicates that their operational phases are up to 40 years (same as that of the Proposed Development) are scoped into the cumulative accommodation demand assessment for the decommissioning phase. Any that are above this lifespan are scoped out. This relates to one of the Cumulative Projects, Beacon Fen Energy Park, for which an operational lifespan of 60 years is proposed. It is assumed that, even in the worst case, the decommissioning phases of the Proposed Development would not overlap with that of Beacon Fen Energy Park. As such, Beacon Fen Energy Park is scoped out of the cumulative assessment of the effect on accommodation demand at decommissioning phase.

3.125. **Table 3.8** summarises the assumptions made regarding FTE jobs and proportion needing accommodation during the construction phase for the Proposed Development and all Cumulative Projects scoped into the assessment.

Table 3.8: Cumulative assessment assumptions – Accommodation demand during decommissioning phase

Cumulative Scheme	Proposal summary	Number of FTE jobs generated during decommissioning (Publicly known / Estimated)	Assumed number of workers needing accommodation during decommissioning phase
Proposed Development – Heckington Fen (data publicly known)	See ES Chapter 4 for full detail	218	164
Vicarage Drove (data estimated)	49.9MW solar farm	25	19
Land West of Cowbridge Road, Bicker Fen, Boston (data estimated)	49.9MW solar farm	25	19
Boston Alternative Energy Facility (data publicly known)	DCO Solar project	250	188
Land at Little Hale Fen (data estimated)	49.9 MW solar farm	25	19
Temple Oaks Renewable Energy Park (data publicly known)	250MW Solar Farm	126	95

Springwell Solar Farm (data estimated)	800MW solar farm	600	600
Fosse Green Energy (data estimated)	320MW solar farm	160	120
Land to the East and West of Mareham Lane (data estimated)	49.9MW solar farm	25	19
Total		1,194	1,047

- 3.126. **Table 3.8** indicates that, based on an assumed 75% Leakage, there is estimated to be 1,047 decommissioning workers requiring accommodation in Serviced and Non-Serviced Accommodation in North Kesteven and Boston as a result of the Proposed Development and Cumulative Projects.
- 3.127. **Table 3.9** shows that, following accommodation of the 1,047 decommissioning workers in addition to the assumed occupancy rate of Serviced and Non-Serviced Accommodation in North Kesteven, there would be surplus capacity in all months of the year.
- 3.128. **Table 3.10** shows that, following accommodation of the 1,047 decommissioning workers in addition to the assumed occupancy rate of Serviced and Non-Serviced Accommodation in Boston, there would be surplus capacity nine months of the year, with the months of June, July and August experiencing deficits.
- 3.129. **Table 3.11** shows the Boston and North Kesteven available Serviced and Non-Serviced Accommodation bedspaces combined, following accommodation of the 1,047 decommissioning workers in addition to the assumed occupancy rates. **Table 3.11** shows that there would be surplus capacity in all months of the year.
- 3.130. A key consideration in assessing the cumulative impact of a Proposed Development is considering the likelihood of this effect occurring within a cumulative timescale. The likelihood of cumulative schemes gaining DCO consent and secondly the likelihood that their construction, operation and decommissioning timescales will overlap with the Proposed Development are all valid considerations when determining the *likelihood of effect*. As shown within **Table 3.2**, 5No. of the schemes considered within this socio-economic assessment are Tier 2 or Tier 3 projects. The projected timescales which have been used to complete this cumulative assessment are taken from the publicly available documents.
- 3.131. None of the Tier 2/3 schemes have yet been submitted to the Planning Inspectorate or (for the case of TCPA applications) the Local Planning Authority for determination. As a result, no assessment of these schemes, both technically and against policy, can take place to determine the likelihood of them gaining consent. In addition, none of the applicants have any legal obligation to comply with the timescales they are currently presenting within the public domain as all are in the pre-submission phases of development. It is the professional

judgement of the socio-economic technical experts that the likelihood of effect of these Tier 2 and 3 schemes being submitted, consented, built, operated and decommissioned in the same timescales as the Heckington Fen development are very low.

3.132. When considering the magnitude of effect, consideration has to be given to both the possible impacts of cumulative development but also the likelihood of effect of these cumulative impacts occurring. As can be seen from the paragraphs above the likelihood of effects from these possible impacts occurring at the same time as decommissioning of the Proposed Development are very low.

3.133. This likelihood of effect has been taken into account when determining the magnitude of impact of the cumulative impact of the decommissioning phase.

3.134. The significance of cumulative decommissioning phase accommodation demand effect is assessed as follows:

- The sensitivity of the receptor in North Kesteven and Boston is assessed as being **medium**, in line with the criteria set out in Table 11.1 of ES Chapter 11 [PS-O67]. Tourism is a growing sector in both of the Districts and wider area.
- The magnitude of the impact is assessed as **low**, in line with the criteria in Table 11.2 of ES Chapter 11 [PS-O67]. There will be a change in terms of use of the existing amenities. This is particularly pronounced when considering the potential worst case scenario of all 1,047 workers requiring accommodation Boston district alone, as opposed to the demand being split between the two districts. When considering the combined effect of demand being spread between both North Kesteven and Boston, there remains surplus capacity in all twelve months of a year, but there is also surplus identified for a worst case scenario if all workers are accommodated within North Kesteven district alone. However, when considering the magnitude of effect, consideration has to be given to both the possible impacts of cumulative development, but also the likelihood of effect of these cumulative impacts occurring. As can be seen from the paragraphs above the likelihood of effects from these possible impacts occurring at the same time as the decommissioning of the Proposed Development are very low.
- The significance of the temporary cumulative effect in respect of accommodation demand is therefore considered to be minor to moderate adverse in North Kesteven, which is **not significant** in EIA terms.

3.135. In reality, the assessment shown here in respect of cumulative accommodation demand during the decommissioning phase is extremely worst case, and the realistic outlook is likely to be limited in comparison, so much as to avoid any deficit in terms of available bedspaces as a result of accommodating construction workers for the Proposed Development and considered Cumulative Projects. The key reasons for this are as follows:

- The number of workers is estimated based on absolute worst case assumptions. Furthermore, in respect of the Proposed Development in isolation, from a worst case perspective we are assuming that 218 workers would be required for the whole 18-month decommissioning period, when in reality the peak on-site workers is likely for an estimated period of up to 6 months, and a far lower number of workers for the remaining 12 month period. This is likely to be a similar pattern between peak and non-peak decommissioning workers for the other schemes scoped into the assessment.



- The assumed Leakage of 75% of workers being outsourced from the local districts is again absolute worst case. An Outline Supply Chain, Employment and Skills Plan (document reference 7.12 / APP-067) has been prepared and submitted with the application. The final detailed CEMP will endeavor to ensure that the construction contractor will source as many workers as possible from within North Kesteven and Boston districts.
- It is unlikely that Town and County Planning Authority (TCPA) sized schemes would need to source 75% of their workers from outside the local area. Therefore, although an absolute worst-case scenario is assessed, it is more realistic to expect that a lower proportion of workers would be sourced from outside the local area and therefore fewer workers would require accommodation during the decommissioning periods.
- It is very unlikely that workers would be accommodated in just one of the districts. The more realistic outlook is that accommodation requirements of workers would be spread between the two districts of North Kesteven and Boston.
- It is highly unlikely that the decommissioning programmes for all of the eight Cumulative Projects and the Proposed Development will exactly align and therefore the realistic demand on accommodation is not expected to be as pronounced as is shown in **Tables 3.9 – 3.11** and as described in paras 3.126 – 3.131 of this report.
- The number of workers is estimated based on absolute worst-case assumptions. Furthermore, the assumed Leakage of 75% of workers being outsourced from the local districts is again absolute worst case.



Table 3.9: Cumulative assessment – assumed occupancy of Serviced and Non-Serviced Accommodation in North Kesteven including housing of decommissioning workers (based on 2022 data)

	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Serviced and Non-Serviced Accommodation bedspaces	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455
Actual number of bedspaces occupied	1,009	1,165	1,509	1,852	1,975	2,144	2,319	2,325	2,079	1,749	1,405	1,068
Decommissioning workers requiring accommodation	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047
Occupancy rate inclusive of decommissioning workers	0.60	0.64	0.74	0.84	0.87	0.92	0.97	0.98	0.90	0.81	0.71	0.61
Actual number of bedspaces occupied	2,056	2,212	2,556	2,899	3,022	3,191	3,366	3,372	3,126	2,796	2,452	2,115
Available bedspaces following housing of decommissioning workers	1,399	1,243	899	556	433	264	89	83	329	659	1,003	1,340



Table 3.10: Cumulative assessment – assumed occupancy of Serviced and Non-Serviced Accommodation in Boston including housing of decommissioning workers (based on 2022 data)

	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Serviced and Non-Serviced Accommodation bedspaces	2,588	2,588	2,588	2,588	2,588	2,588	2,588	2,588	2,588	2,588	2,588	2,588
Actual number of bedspaces occupied	546	635	991	1,347	1,461	1,606	1,791	1,833	1,528	1,203	847	583
Decommissioning workers requiring accommodation	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047
Occupancy rate inclusive of decommissioning workers	0.62	0.65	0.79	0.93	0.97	1.02	1.10	1.11	1.00	0.87	0.73	0.63
Actual number of bedspaces occupied	1,593	1,682	2,038	2,394	2,508	2,653	2,838	2,880	2,575	2,250	1,894	1,630
Available bedspaces following housing of decommissioning workers	995	906	550	194	80	-65	-250	-292	13	338	694	958



Table 3.11: Cumulative assessment – assumed occupancy of Serviced and Non-Serviced Accommodation in North Kesteven and Boston combined including housing of decommissioning workers (based on 2022 data)

	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Serviced and Non-Serviced Accommodation bedspaces	6,043	6,043	6,043	6,043	6,043	6,043	6,043	6,043	6,043	6,043	6,043	6,043
Actual number of bedspaces occupied	1,555	1,800	2,500	3,199	3,436	3,750	4,110	4,158	3,608	2,952	2,252	1,650
Decommissioning workers requiring accommodation	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047
Occupancy rate inclusive of decommissioning workers	0.43	0.47	0.59	0.70	0.74	0.79	0.85	0.86	0.77	0.66	0.55	0.45
Actual number of bedspaces occupied	2,602	2,847	3,547	4,246	4,483	4,797	5,157	5,205	4,655	3,999	3,299	2,697
Available bedspaces following housing of decommissioning workers	3,441	3,196	2,496	1,797	1,560	1,246	886	838	1,388	2,044	2,744	3,346

Mitigation and Enhancement

- 3.136. Adverse effects are predicted in relation to Accommodation Demand during construction and decommissioning phases. This is specific to the absolute worst-case scenario of all workers being accommodated within either North Kesteven or Boston, and only during particular months of a twelve-month period when capacity rates are higher due to baseline tourism and visitor levels.
- 3.137. In reality, the assessment shown here in respect of cumulative accommodation demand during the construction and decommissioning phases is extremely worst case, and the realistic outlook is likely to be limited in comparison, so much as to avoid any deficit in terms of available bedspaces as a result of accommodating workers for the Proposed Development and considered Cumulative Projects. The key reasons for this are as follows:
- The number of workers is estimated based on absolute worst-case assumptions. Furthermore, in respect of the Proposed Development in isolation, from a worst case perspective we are assuming that 218 workers would be required for the whole 18-month decommissioning period, when in reality the peak on-site workers is likely for an estimated period of up to 6 months, and a far lower number of workers for the remaining 12 month period. This is likely to be a similar pattern between peak and non-peak decommissioning workers for the other schemes scoped into the assessment.
 - The assumed Leakage of 75% of workers being outsourced from the local districts is again absolute worst case. An Outline Supply Chain, Employment and Skills Plan (OSCESP) (document reference 7.12 / APP-O67) has been prepared and submitted with the application. The final detailed OSCESP will endeavor to ensure that the construction contractor will source as many workers as possible from within North Kesteven and Boston districts.
 - It is unlikely that Town and County Planning Authority (TCPA) sized schemes would need to source 75% of their workers from outside the local area. Therefore, although an absolute worst-case scenario is assessed, it is more realistic to expect that a lower proportion of workers would be sourced from outside the local area and therefore fewer workers would require accommodation during the decommissioning periods.
 - It is very unlikely that workers would be accommodated in just one of the districts. The more realistic outlook is that accommodation requirements of workers would be spread between the two districts of North Kesteven and Boston.
 - It is highly unlikely that the construction or decommissioning programmes for all of the considered Cumulative Projects and the Proposed Development will exactly align and therefore the realistic demand on accommodation is not expected to be as pronounced as is shown in **Tables 3.5 – 3.7** and **Table 3.9–3.11** as described in paras 3.98 – 3.103 related to Accommodation Demand effects during the construction phase and paras 3.126 – 3.131 related to Accommodation Demand effects during the decommissioning phase of this report.
 - The number of workers is estimated based on absolute worst-case assumptions. Furthermore, the assumed Leakage of 75% of workers being outsourced from the local districts is again absolute worst case

Residual Cumulative Effects

3.138. The residual cumulative effects are as follows:

- Construction phase:
 - Employment – **major beneficial** in North Kesteven and Boston, which is **significant** in EIA terms.
 - Economic contribution – **major beneficial** in North Kesteven and Boston, which is **significant** in EIA terms.
 - Accommodation demand – **minor to moderate adverse** in North Kesteven and Boston, which is **not significant** in EIA terms.
- Operational phase:
 - Employment – **minor to moderate beneficial** in North Kesteven and Boston, which is **not significant** in EIA terms.
 - Economic contribution – **minor to moderate beneficial** in North Kesteven and Boston, which is **not significant** in EIA terms.
 - Business rates – **moderate beneficial** in North Kesteven and Boston, which is **significant** in EIA terms.
- Decommissioning phase:
 - Employment – **major beneficial** in North Kesteven and Boston, which is **significant** in EIA terms.
 - Economic contribution – **major beneficial** in North Kesteven and Boston, which is **significant** in EIA terms.
 - Accommodation demand – **minor to moderate adverse** in North Kesteven and Boston, which is **not significant** in EIA terms.

Conclusion

3.139. There will be beneficial effects in relation to employment and economic contribution during all development stages, and business rates during the operational phase. The assessment has been made on publicly known information, which is limited, and otherwise assumes a worst case scenario in terms of jobs, GVA and business rates generated. As such, the beneficial cumulative socio-economic effects identified are considered to be worst case and compressed; the realistic beneficial socio-economic cumulative effects relating to employment, economic contribution and business rates will be greater than what is presented this assessment. Accommodation Demand effect during the construction and decommissioning phases is predicted to be minor to moderate adverse but is not significant.



Even then, this is an absolute worst case scenario, and the realistic outlook is likely to be much more limited in comparison.

Noise and Vibration

Introduction

- 3.140. This section will present an update to the cumulative noise and vibration effect assessment previously presented in the latest version of **Chapter 12 Noise and Vibration** of the ES (document reference 6.1.12/PS-069).

Assessment Approach

- 3.141. As noted in **Chapter 12 Noise and Vibration** of the ES (document reference 6.1.12/PS-069), beyond a distance of approximately 1km, noise from construction works (within the Energy Park site, Offsite Cable Route Corridor or National Grid Bicker Fen Substation) and operational noise effects from the Proposed Development become negligible. Vibration effects are even more localised and become negligible beyond a distance of around 150 m. A distance of 1 km therefore represents the Zone of Influence for direct effects of noise and vibration from construction in terms of this topic. It remains the case that, generally, none of the projects listed in **Table 2.1** are located within such proximity from the Proposed Development that noise-sensitive receptors would be within 1km of both the Proposed Development and any of the cumulative schemes considered. The only exception would be for partial overlap of the cable connection route of some of the projects of **Table 2.1** (such as Site 12) with that of the Proposed Development; however, the associated construction noise and vibration impact are localised and of relatively short duration, therefore meaning there is a low probability of concurrent works leading to significant impacts.
- 3.142. There are therefore no predicted direct cumulative effects of noise and vibration from either the construction activities or operation of the Proposed Development. However, construction traffic from several of the schemes considered may use certain routes simultaneously. Cumulative construction traffic levels, based on worst-case assumptions, have been reassessed based on the latest information as discussed below in the section on Transport and Access of this document. The potential noise effects of this cumulative traffic are considered in line with the methodology set out in the ES (document reference 6.1.12/PS-069 paragraph 12.3.11 and Table 12.1). The relevant noise receptors would be noise-sensitive dwellings along the routes considered, which are considered to have a high sensitivity to noise.
- 3.143. Where possible, the prediction method of Calculation of Road Traffic Noise (CRTN)¹⁸ been used to calculate the noise effects of construction-related traffic, which are assessed with reference to the Design Manual for Roads and Bridges (DMRB)¹⁹. On the basis that relevant road surface will be checked and maintained prior to use, significant vibration effects from traffic using the road are unlikely (although momentary vibration may be perceptible in some cases).

Baseline Conditions

¹⁸ HMSO Department of Transport (1988), Calculation of Road Traffic Noise (CRTN).

¹⁹ Highways England (2019): Design Manual for Roads and Bridges (DMRB) – LA111 – Noise and Vibration, Nov 2019.

- 3.144. It remains the assumption for this assessment that baseline traffic levels on the A17 are of around 20,000 vehicles per day (including around 3000–4000 HGVs). The A52 typically carries more than 5000 vehicles and more than 500 HGVs per day. The access route to the National Grid Bicker Fen Substation from the A52 could use Cowbridge Road, Bicker Drive and Vicarage Drive which carry in comparison low traffic numbers.
- 3.145. At Deadline 5, the Applicant has assessed the impact of NGET's use of the Triton Knoll Access Track for construction of the extension to National Grid Bicker Fen Substation in a separate Technical Note (**ES Transport and Access Technical Note – Assessment of Triton Knoll Access Track, Doubletwelves Drive and Bicker Drive**). The Applicant and NGET proposes to use the Triton Knoll Access Track and avoid using Cowbridge Road, Bicker Drive and Vicarage Drive. See the section on Transport and Access of this document for details.

Assessment of Likely Cumulative Effects

- 3.146. The maximum worst-case cumulative construction traffic on the A17 is assessed to be under 300 light vehicles and under 200 heavy vehicles per average weekday. This still represents a small proportion of the baseline traffic levels. Using the calculation methodology of CRTN, the maximum calculated increase in traffic noise for properties along the A17 would be of 0.2 dB. This remains clearly below 1 dB and therefore corresponds to a negligible effect (not significant), even accounting for the sensitivity of the receptors, based on the criteria set out in Table 12.1 of the ES (document reference 6.1.12/PS-069), which were derived from the DMRB guidance.
- 3.147. The additional worst-case cumulative construction traffic accessing the National Grid Bicker Fen Substation from the south is assessed to comprise 20 heavy vehicles per day, or 30 vehicles per day in total. The relative impact of this traffic on the A52 is calculated to be 0.1 dB, which would also represent a negligible influence. The traffic on Cowbridge Road, Bicker Drive and Vicarage Drive is too low for the CRTN method to be used reliably. Using the prediction method of BS 5228, based on an average of 2 heavy goods vehicles per hour, would represent noise levels of 58 dB L_{Aeq} . This potentially corresponds to a minor effect based on the criteria of Table 12.1 of the ES (document reference 6.1.12/PS-069). If the duration of cumulative traffic at this level was less than 1 month, the effect would reduce to negligible, but in the absence of detailed information at this stage, a longer duration is assumed.
- 3.148. In conclusion, the potential cumulative effects of construction traffic noise were determined to be **negligible to minor** adverse which is **not significant**.

Mitigation and Enhancement

- 3.149. No additional mitigation is required.
- 3.150. As discussed below in the section on Transport and Access of this document, the Applicant and NGET propose to use the Triton Knoll Access Track and avoid using Cowbridge Road, Bicker Drive and Vicarage Drive. A caveat to this use by NGET is that they reserve the right to use these roads in the event of an emergency or the Triton Knoll Access Track being blocked or impassable. Using the Triton Knoll Access Track would avoid the minor adverse effect identified above for residents on Cowbridge Road, Bicker Drive and Vicarage Drive to negligible. Any emergencies or blockages would be short-term and unlikely to create sustained traffic associated with a minor effect. Use of the Triton Knoll Access Track would



also be associated with negligible effects as the associated traffic values would be lower and noise-sensitive receptors located further away.

Residual Cumulative Effects

- 3.151. The potential cumulative effects of construction traffic noise, accounting for the proposed mitigation, are determined to be **negligible** which is **not significant**. No other cumulative effects were identified.

Conclusion

- 3.152. The conclusions of the ES remain applicable: **no significant** cumulative noise or vibration effects are identified.

Climate Change

Introduction

3.153. This section of this document provides an update of the potential cumulative effects in combination with the Proposed Development, in relation to Climate Change. In line with the EIA Regulations, the assessment considers the following:

- Emissions reduction: potential effects of the Proposed Development on emissions of GHGs; and
- Climate change adaptation: both the vulnerability of the Proposed Development to climate change and also the implications of climate change for the predicted effects of the project, as assessed by the other topic specialists ('in-combination climate effects').

Assessment Approach

Emissions Reduction

3.154. A review of all shortlisted cumulative projects as per **Table 2.1** of this document has been undertaken as part of this cumulative effects assessment update. At Deadline 5, the Climate Change section (Emissions Reduction and Climate Change Adaptation (Resilience)) was reviewed in light of further information available, principally the Beacon Fen Energy Park and Springwell Solar Farm PEIRs. All schemes were included in the assessment with the exception of 'Lincolnshire Reservoir (WA010003)' as the assessment is limited to other energy projects.

3.155. For Emissions Reduction, the methodology presented under the 'Assessment Methodology' section title in **Chapter 13: Climate Change** (document reference 6.1.13/PS-071) continues to apply.

Climate Change Adaptation (Resilience)

3.156. A review of all shortlisted cumulative projects as per **Table 2.1** of this document has been undertaken as part of this cumulative effects assessment update.

3.157. For Climate Change Adaptation (Resilience), the methodology presented under the 'Assessment Methodology' section title in **Chapter 13: Climate Change** (document reference 6.1.13/PS-071) continues to apply.

Baseline Conditions

Emissions Reduction

3.158. The baseline conditions remain valid as per the 'Baseline Conditions' section for Emissions Reduction in **Chapter 13: Climate Change** (document reference 6.1.13/PS-071).

Climate Change Adaptation (Resilience)

- 3.159. The baseline conditions remain valid as per the 'Baseline Conditions' section for Climate Change Adaptation (Resilience) in **Chapter 13: Climate Change** (document reference 6.1.13/PS-071).

Assessment of Likely Cumulative Effects

Emissions Reduction

- 3.160. For Emissions Reduction, an updated cumulative effects assessment is presented below, in accordance with the 'Assessment Methodology' in **Chapter 13: Climate Change** (document reference 6.1.13/PS-071).
- 3.161. Presented below in **Table 3.12** is an updated list of other planned solar energy projects within Lincolnshire County Council area, alongside their corresponding generation capacities. Collectively, these represent an estimated 4,857.7MW of energy generation.
- 3.162. The assessment presented in **Chapter 13: Climate Change** (document reference 6.1.13/PS-071) included all GHG emissions and concluded that the effects would be **negligible to minor adverse (not significant)** for both the construction and decommissioning phases, and **moderate beneficial (significant)** for the operational phase. The same effects are anticipated for the other sites, utilising the same assessment methodology.
- 3.163. To further demonstrate the cumulative benefits of these projects, and the additional contribution of the Proposed Development, this generating capacity has been contextualised to the UK's national targets for newly installed energy generation capacity. This data was published by BEIS to show the projected requirements of newly installed electricity generating capacity for different types of generation in order to meet the national UK Net Zero Strategy (BEIS, 2021).
- 3.164. Whilst this data does not specify a projected capacity of solar projects specifically, it does project a newly installed capacity of 107,000MW across all types of renewable energy generation (including onshore and offshore wind, geothermal etc.) by 2040.
- 3.165. **Table 3.12** below shows that the contribution of the currently planned solar projects (and one energy from waste facility) in the local area is estimated to represent a minimum of 4.54% of the total national projections by 2040, and with the additional generating capacity of the Proposed Development, would increase further to represent a minimum 4.91% of the total national capacity.

Table 3.12 Planned Projects within Lincolnshire County Council area²⁰

²⁰ Some of the application boundaries of the cumulative sites are cross boundary applications are therefore partially sit outside of Lincolnshire County Council. None of the submitted documents for these applications split the generation capacity down to County level, therefore within this cumulative assessment it has been assumed all generation is within Lincolnshire.

Scheme Name and Reference Number	Solar Capacity (MW)	Contribution to projected UK Renewable Capacity (%)
Vicarage Drove B/21/O443	49.9	0.05
Land West of Cowbridge Road, Bicker Fen, Boston B/22/O356 HO4-0849-22	49.9	0.05
Boston Alternative Energy Facility ENO10095	80 (energy from waste)	0.07 (energy from waste)
Mallard Pass Solar Farm ENO10127	350	0.33
Cottham Solar Project ENO10133	600	0.56
Gate Burton Energy Park ENO10131	500	0.47
West Burton Solar Project ENO10132	480	0.45
Land at Little Hale Fen 23/1021/FUL	49.995	0.05
Land North of Roman Bank and East of Middle Marsh Road at Red House Farm, Holbeach Bank HO9-0132-23	48	0.04
Temple Oaks Renewable Energy Park ENO10126	250	0.23
Tillbridge Solar Project ENO10142	50	0.05
Beacon Fen Energy Park ENO10152	400	0.37
Springwell Solar Farm ENO10149	800	0.75
Fosse Green Energy ENO10154	350	0.33
One Earth Solar Farm ENO10159	750	0.70
Land to the East and West of Mareham Lane, Sleaford 23/1419/FUL	49.90	0.05

Scheme Name and Reference Number	Solar Capacity (MW)	Contribution to projected UK Renewable Capacity (%)
Sub-Total	4,857.70	4.54
Heckington Fen Energy Park	400	0.37
Total	5,257.70	4.91

3.166. This shows the beneficial effects of the Proposed Development and its contribution towards meeting the UK’s net zero targets, and the importance of the local area to contributing to these targets on a national scale. On this basis, cumulative operational effects are considered to remain **moderate beneficial (significant)**.

Climate Change Adaptation (Resilience)

3.167. With respect to climate change adaptation, as outlined in paragraph 13.6.8 of **Chapter 13: Climate Change** (document reference 6.1.13/PS-071), this is a project specific consideration, namely the resilience of the project in question to climate change and the extent to which projected climate change could alter other predicted impact judgements.

3.168. More widely, in relation to potential interactions with other developments, and assuming the required compliance with regulatory standards and accepted good practice mitigation measures, **no significant cumulative effects** are anticipated.

Mitigation and Enhancement

3.169. No further mitigation and enhancement measures are anticipated, and the ‘Mitigation Measures’ presented under the relevant section titles for Emissions Reduction and Climate Change Adaptation (Resilience), in **Chapter 13: Climate Change** (document reference 6.1.13/PS-071) remain valid and unchanged.

Residual Cumulative Effects

3.170. The residual cumulative effects for **Emissions Reduction** and Climate Change Adaptation (Resilience), remain as per the conclusions drawn in the ‘Assessment of Likely Cumulative Effects’ in the **Emissions Reduction** and Climate Change Adaptation (Resilience) sections of this document (paragraph 3.64–3.65).

Conclusion

- 3.171. In conclusion:
- Cumulative effects for Emissions Reduction are considered to remain **moderate beneficial (significant)**.
 - **No significant** cumulative effects are anticipated for Climate Change Adaptation (Resilience)

Transport and Access

Introduction

- 3.172. This section of this document provides an update of the potential cumulative effects in combination with the Proposed Development, in relation to Transport and Access.

Assessment Approach

- 3.173. Consideration and a review of all shortlisted cumulative projects as per **Table 2.1** of this document has been undertaken as part of this cumulative effects assessment update. Three projects (No. 3, 9 and 12 of **Table 2.1**) in the updated cumulative shortlist are identified as having a construction period which could overlap with that of the Proposed Development (2026-2028), and which could also reasonably be anticipated to use a construction route which could extend to the A17 within the vicinity of the Energy Park frontage (the study area identified at paragraph 14.3.3 of **Chapter 14: Transport and Access** (document reference 6.1.14/PS-073). Site 12 (Beacon Fen) is also identified as being anticipated to use the A52 construction route that could serve as the construction and operational access route to the National Grid Bicker Fen Substation as part of the Proposed Development (also identified at paragraph 14.3.3 of **Chapter 14: Transport and Access** (document reference 6.1.14/PS-073).
- 3.174. **Appendix 3** includes a summary of each of the developments listed at **Table 2.1** and for those that have not been included in this Transport and Access cumulative assessment, justification relating to why they are not included. **Appendix 3** has been based upon information available within the public domain at the time of writing.
- 3.175. **Appendix 3** also includes a summary of how the AADT and HGV numbers for sites 3, 9 and 12 have been established and also identifies which links assessed within **Chapter 14: Transport and Access** (document reference 6.1.14/PS-073) are likely to be subject to the cumulative traffic flows associated with each project.
- 3.176. It should be noted that **Appendix 3** assumes that 100% of construction traffic associated with sites 3 and 9 will use the A17 corridor within the vicinity of the Proposed Development. However, in reality it could only be a proportion of the total construction vehicle movements and will be likely to be impacted by where materials and equipment is sourced from. It is therefore considered that this is a robust assessment. It is anticipated that 100% of traffic associated with site 12 (Beacon Fen) could use the A17 within the vicinity of the Proposed Development on the basis that it is proposing a left in/left-out arrangement that will likely require vehicles to turn at the A52 roundabout to the east of the Proposed Development.
- 3.177. Of the sites identified at **Table 2.1**, it is anticipated that vehicles associated with the laying of the off-site cable to the National Grid Bicker Fen Substation for sites 10 (Temple Oaks) and 12 (Beacon Fen) could also use the A52, Cowbridge Road, Bicker Drive, Vicarage Drive. However, the Scoping Report and PEIR for these two projects are not yet detailed enough to clearly assess which public highways the vehicles required for the construction of the offsite cable will utilise. Nor is it possible to determine the traffic numbers associated with these works. Therefore, the traffic associated with construction of the offsite cables for these two cumulative sites has not been considered at this stage (and therefore does not form one of the assessment sites listed at **Table 3.13**).

- 3.178. This section therefore considers links one to seven (identified at Plate 4.1, Plate 4.2 and paragraph 14.5.34 of **Chapter 14: Transport and Access** (document reference 6.1.14/ PS-073)). At Deadline 5, the Applicant has assessed the impact of NGET's use of the Triton Knoll Access Track for construction of the extension to National Grid Bicker Fen Substation in a separate Technical Note (**ES Transport and Access Technical Note – Assessment of Triton Knoll Access Track, Doubletwelves Drove and Bicker Drove**). This separate technical note has been submitted at Deadline 5.
- 3.179. A review of the Order Limits presented within the PEIR for site 12 (Beacon Fen) suggests that there is currently no clear intent for the full extent of the Triton Knoll Access Track to be used to access the National Grid Bicker Fen Substation (although parts of the Triton Knoll Access Track are within Beacon Fen's Order Limits for what appears to be a cable route). Therefore, neither construction traffic from NGET nor the Beacon Fen applicant could travel the full length of the Triton Knoll Access Track from the public highway to the National Grid Bicker Fen Substation as part of the Beacon Fen works. The PEIR confirms in Table 9.10 that site 12 will use links four to seven (Cowbridge Road, Bicker Drove, Vicarage Drove and the A52) for construction traffic to the National Grid Bicker Fen Substation. There are therefore no forecast cumulative effects at links eight to ten (identified at Plate 2.1 of the **ES Transport and Access Technical Note – Assessment of Triton Knoll Access Track, Doubletwelves Drove and Bicker Drove**), based on the information presented within the Beacon Fen PEIR. The effects of the standalone Proposed Development at links eight to ten are already considered within the **ES Transport and Access Technical Note – Assessment of Triton Knoll Access Track, Doubletwelves Drove and Bicker Drove** (document reference ExA.ESATN-Access-D5.V1).
- 3.180. The same assessment criteria are applied in this cumulative effects assessment update, as per section 14.3 in **Chapter 14: Transport and Access** (document reference 6.1.14/PS-073), with the exception of the assessment changes identified at Section 2 of the Applicant's **ES Transport and Access Technical Note – Sensitivity of Cowbridge Road, Bicker Drove and Vicarage Drove** (document reference ExA.ESATN.D3.V1). These changes were made to reflect guidance set out in the Environmental Assessment of Traffic and Movement guidance published in July 2023 and also the sensitivity of links four to six and have been applied to this cumulative assessment.

Baseline Conditions

- 3.181. The baseline conditions remain valid as per section 14.5 ('Baseline Conditions') in **Chapter 14: Transport and Access** (document reference 6.1.14/PS-073).

Assessment of Likely Cumulative Effects

Traffic Flows

- 3.182. Table 14.9 of **Chapter 14: Transport and Access** (document reference 6.1.14/PS-073) confirms the AADT and HGV trips for the busiest times during the construction period of the Energy Park, off-site cable route and Bicker Fen Substation extension. These equate to an AADT of 104 vehicles and 39 HGVs at links one to three and 15 vehicles and 10 HGVs at links four to seven. **Appendix 3** confirms the forecast AADT and HGV trips for sites 3, 9 and 12 individually, and also the cumulative traffic impact at each of the highway links considered as part of this cumulative assessment. This equates to an AADT of 428 vehicles including 185

HGVs at links one to three and an AADT of 30 vehicles including 20 HGVs at links four to seven. The cumulative impact at links one to seven is set out in **Table 3.13**.

Table 3.13 – 2022 plus Cumulative Total Traffic Flows

Link		Baseline Two-Way AADT	With Heckington Fen plus Cumulative Development AADT	Additional Two-Way Traffic		Impact Significance	
				Total Vehs	HGVs	Total Vehs	HGVs
Link One – A17 west of proposed temporary construction access	AADT	20,373 (4,350 HGVs)	20,801 (4,535 HGVs)	428 [+2.1%]	185 [+4.25%]	Negligible	Negligible
Link Two – A17 west of proposed construction / operational access		21,307 (3,487 HGVs)	21,735 (3,672 HGVs)	428 [+2.01%]	185 [+5.3%]	Negligible	Low
Link Three – A17 east of proposed construction / operational access		21,249 (3,485 HGVs)	21,677 (3,670 HGVs)	428 [+2.01%]	185 [+5.31%]	Negligible	Low
Link Four – Cowbridge Road		136 (5 HGVs)	166 (25 HGVs)	30 [+22.06%]	20 [+400%]	Medium	High
Link Five – Bicker Drove		108 (3 HGVs)	138 (23 HGVs)	30 [+27.78%]	20 [+666.7%]	Medium	High
Link Six – Vicarage Drove		69 (2 HGVs)	99 (22 HGVs)	30 [+43.48%]	20 [+1,000%]	High	High
Link Seven – A52 south of National Grid haul road		5,657 (559 HGVs)	5,687 (579 HGVs)	30 [+0.53%]	20 [+3.58%]	Negligible	Negligible

- 3.183. When assessed against the criteria at Table 2.1 of **ES Transport and Access Technical Note – Sensitivity of Cowbridge Road, Bicker Drove and Vicarage Drove** (document reference ExA.ESTATN.D3.V1), the cumulative number of vehicles/HGVs at links one and seven are likely to be considered negligible, the cumulative number of vehicles/HGVs at links two and three are likely to be considered Low and the cumulative number of vehicles/HGVs at links four to six are likely to be considered High.
- 3.184. When the magnitude of impacts summarised at paragraph 3.180 are cross referred to the significance matrix at Table 14.3 of **Chapter 14: Transport and Access (document reference 6.1.14/PS-073)**, this confirms that the significance of effect is likely to be **Negligible** at links one and seven, **Moderate** at links two and three and **Major** at links four to six.
- 3.185. During the construction phase there will be cumulative direct, short-term, temporary, negative effects on traffic flows. Overall, there is likely to be a **Major** level of impact significance at some links, and therefore **Significant** effects in EIA terms, without mitigation.
- 3.186. The 2023 IEMA guidance states at paragraph 3.9 that the impact of traffic and movement will vary for each type of impact and at paragraph 3.11 confirms that the assessment may depend on description and judgement rather than any commonly agreed method. It is Pegasus Group’s professional judgement that the percentage increase in trips at links four to six is skewed by the current very low traffic flows on these roads (as shown in the ‘Baseline Two-way AADT’ column of **Table 13.13**).
- 3.187. The Outline Construction Traffic Management Plan (OCTMP), which is secured by Requirement 14 of the DCO, sets out mitigation measures to be implemented during the construction phase for the Proposed Development. A similar document has been secured for cumulative site 3, and it is anticipated that similar documents will be secured for cumulative sites 9 and 12 which will also secure mitigation measures to control vehicles during the construction phases of those projects. It is considered that the OCTMP mitigation measures, in combination with mitigation measures secured by the cumulative sites in due course, are sufficient to address the cumulative significant effects.

Accidents and Safety

- 3.188. As set out in **Appendix 14.1 – Summary of Personal Injury Collisions** (document reference 6.3.14.1/APP-217) and at paragraphs 14.5.17 to 14.5.22 of **Chapter 14: Transport and Access (document reference 6.1.14/PS-073)**, there is not considered to be any underlying safety problem within the study area. The magnitude of change in accidents and safety at links one to seven is therefore likely to be considered negligible at all links when assessed against the criteria at Table 2.1 of **ES Transport and Access Technical Note – Sensitivity of Cowbridge Road, Bicker Drove and Vicarage Drove** (document reference ExA.ESTATN.D3.V1). When this is cross referred to the significance matrix at Table 14.3 of **Chapter 14: Transport and Access (document reference 6.1.14/PS-073)**, this confirms that the significance of effect is likely to be **Negligible** on all links.
- 3.189. During the Construction Phase there will be direct, short-term, temporary, negative effects on accidents and safety. Overall, they are of a **Negligible** level of impact significance, and therefore **Not Significant** in EIA terms.

Hazardous Loads

- 3.190. There are no dangerous or hazardous loads forecast to be associated with the construction of the Proposed Development. Site 3 did not consider hazardous and dangerous loads within its ES Chapter on Transport and Access, and site 12 has not sought to scope this into its future ES Chapter on Transport and Access. Site 9 was not subject of an Environmental Impact Assessment and does not mention hazardous or dangerous loads in its supporting transport work. It is therefore considered reasonable to assume that there will be no cumulative impacts associated with hazardous or dangerous loads and therefore that there will be **No Significant** cumulative effects.

Severance

- 3.191. When assessed against the criteria at Table 2.1 of **ES Transport and Access Technical Note – Sensitivity of Cowbridge Road, Bicker Drove and Vicarage Drove** (document reference ExA.ESATN.D3.V1), the cumulative severance at links one to three and link seven are likely to be considered Negligible, and the cumulative severance at links four to six are likely to be considered High.
- 3.192. When the magnitude of impacts summarised at paragraph 3.188 are cross referred to the significance matrix at Table 14.3 of **Chapter 14: Transport and Access (document reference 6.1.14/PS-073)**, this confirms that the significance of effect is likely to be **Negligible** for severance at links one to three and seven and **Major** for total vehicles at links four to six.
- 3.193. During the construction phase there will be cumulative direct, short-term, temporary, negative effects on severance. Overall, there is likely to be a **Major** level of impact significance at some links, and therefore **Significant** effects in EIA terms, without mitigation.
- 3.194. The 2023 IEMA guidance states at paragraph 3.16 that *'caution needs to be observed when applying these thresholds as very low baseline flows are unlikely to experience severance impacts even with high percentage changes in traffic'*. It is Pegasus Group's professional judgement that the percentage increase in trips at links four to six is skewed by the current very low traffic flows on these roads (as shown in the 'Baseline Two-way AADT' column of **Table 13.13**).
- 3.195. The Outline Construction Traffic Management Plan (OCTMP), which is secured by Requirement 14 of the DCO, sets out mitigation measures to be implemented during the construction phase for the Proposed Development. A similar document has been secured for cumulative site 3, and it is anticipated that similar documents will be secured for cumulative sites 9 and 12 which will also secure mitigation measures to control vehicles during the construction phases of those projects. It is considered that the OCTMP mitigation measures, in combination with mitigation measures secured by the cumulative sites in due course, are sufficient to address the cumulative significant effects.

Driver Delay

- 3.196. When assessed against the criteria at Table 2.1 of **ES Transport and Access Technical Note – Sensitivity of Cowbridge Road, Bicker Drove and Vicarage Drove** (document reference ExA.ESATN.D3.V1), the cumulative driver delay at links one and seven is likely to be considered Negligible, the cumulative driver delay at links two and three is likely to be considered Low and the cumulative driver delay at links four to six is likely to be considered High.



- 3.197. When the magnitude of impacts summarised at paragraph 3.193 are cross referred to the significance matrix at Table 14.3 of **Chapter 14: Transport and Access (document reference 6.1.14/PS-073)**, this confirms that the significance of effect is likely to be **Negligible** at links one and seven, **Moderate** at links two and three and **Major** at links four to six .
- 3.198. During the construction phase there will be cumulative direct, short-term, temporary, negative effects on driver delay. Overall, there is likely to be a **Major** level of impact significance at some links, and therefore **Significant** effects in EIA terms, without mitigation.
- 3.199. However, as per the magnitude of impact associated with the number of vehicles/HGVs and severance, it is Pegasus Group's professional judgement that the percentage increase in trips at links four to six is skewed by the current very low traffic flows on these roads (as shown in the 'Baseline Two-way AADT' column of **Table 13.13**).
- 3.200. The Outline Construction Traffic Management Plan (OCTMP), which is secured by Requirement 14 of the DCO, sets out mitigation measures to be implemented during the construction phase for the Proposed Development. A similar document has been secured for cumulative site 3, and it is anticipated that similar documents will be secured for cumulative sites 9 and 12 which will also secure mitigation measures to control vehicles during the construction phases of those projects. It is considered that the OCTMP mitigation measures, in combination with mitigation measures secured by the cumulative sites in due course, are sufficient to address the cumulative significant effects.

Operation

- 3.201. Paragraph 14.6.38 of **Chapter 14: Transport and Access** (document reference 6.114/PS-073) confirms that the operational phase of the Proposed Development could be associated with around five vehicle trips per day (ten two-way movements per day) (typically a 7.5 tonne van or 4x4 type vehicles). The Transport and Access Environmental Statement chapter for site 3 identifies that its operational phase could be associated with 30 two-way HGV movements and 173 two-way staff vehicle trips, of which it is assumed 25% could use the A17 (equating to around 44 two-way daily trips). Site 9 suggests two to three operational trips per year. It is understood from the Site 12 PEIR that there could be around 11 HGVs per day AADT (1,000 two-way HGV movements across three months) but the PEIR has not accounted, at this stage, for construction worker trips. It is therefore concluded that cumulatively, the Proposed Development and sites 3, 9 and 12 could be associated with around 95 two-way daily vehicle movements, including 41 HGV trips using the A17 only (links one to three).
- 3.202. The total number of cumulative operational trips are forecast to be lower than the AADT and HGVs forecast as part of the construction phase of development, which is forecast to have a negligible impact. It is therefore considered that the impacts of the operational phase of development will also be **Negligible (Not Significant)**.

Decommissioning

- 3.203. Paragraph 14.6.41 of **Chapter 14: Transport and Access** (document reference 6.114/PS-073) confirms that the activities involved in the decommissioning process for the Energy Park are not yet known and paragraphs 14.6.42 to 14.6.46 confirm the decommissioning arrangements for the off-site cable corridor and the Bicker Fen Substation extension. Paragraph 14.6.48 of **Chapter 14: Transport and Access** (document reference 6.114/PS-073) suggests that the number of vehicles likely to be associated with the decommissioning are likely to be similar to those associated with the construction and therefore it is considered that the cumulative effects are likely to be in line with those assessed as part of the assessment of construction traffic (overall **Negligible Impact Significance**).
- 3.204. Site 3 does not identify traffic for the decommissioning phase but confirms that it is anticipated that 'the impacts during decommissioning will be similar in nature to those of construction with reduced traffic generation'. Site 12 has not identified decommissioning traffic numbers at this stage and site 9 also does not include traffic forecasts for decommissioning. It is considered reasonable to assume based on the information available that the total number of cumulative decommissioning trips could be similar to those forecast as part of the construction phase of development, which is forecast to have a negligible impact. It is therefore considered that the impacts of the operational phase of development will also be **Negligible**.
- 3.205. It should be noted that the assessment of decommissioning traffic assumes that all developments will be decommissioned during the same time-period. However, this would be subject to confirmation in due course, subject to when the schemes ultimately become operational.

Mitigation and Enhancement

- 3.206. No further mitigation and enhancement measures are anticipated, and the 'Mitigation by Design' section in **Chapter 14: Transport and Access** (document reference 6.1.14/PS-073) remain valid and unchanged.
- 3.207. The use of the Triton Knoll access track by NGET for all trips associated with the construction of the extension of National Grid Bicker Fen Substation for the Proposed Development has been assessed at Deadline 5 and a separate Technical Note (**ES Transport and Access Technical Note – Assessment of Triton Knoll Access Track, Doubletwelves Drove and Bicker Drove**) has been submitted. This confirms that NGET reserve the right to use the existing route via the A52, and links four to six in the event of an emergency or Triton Knoll access track being blocked or impassable, but that otherwise links four to six would not be used during the construction phase of works to the extension of the Bicker Fen Substation associated with the Heckington Fen Energy Park.
- 3.208. It is considered that the mitigation measures, in combination with mitigation measures secured by the cumulative sites in due course, are sufficient to address the cumulative significant effects.
- 3.209.** It should be noted that, based on the information within the public domain at this time, if the Applicant and NGET use the Triton Knoll Access Track to construct the extension at Bicker Fen Substation, there will be no cumulative effects (on the basis that the Beacon Fen PEIR and Order Limits do not include the full extents of the Triton Knoll Access Track) and the documentation states the A52 will be used. Therefore no cumulative assessment of the Triton Knoll Access Track has been undertaken. Likewise, if the Applicant and NGET use the Triton Knoll Access Track for construction of the Bicker Fen Substation extension, there will no cumulative effects on links four to seven as all trips associated with the Proposed Development will have been removed from these links. The general assessment of the Applicant/NGET use of Triton Knoll is set out in **ES Transport and Access Technical Note – Assessment of Triton Knoll Access Track, Doubletwelves Drove and Bicker Drove** submitted at Deadline 5.

Residual Cumulative Effects

- 3.210. It is considered that during the construction phase of the Proposed Development there will be cumulative direct, short-term, temporary effects with an overall **Negligible (adverse)** significance, and therefore **Not Significant** in EIA terms.
- 3.211. It is considered that during the operational phase of the Proposed Development there will be cumulative direct, long-term, temporary effects with an overall **Negligible (adverse)** significance, and therefore **Not Significant** in EIA terms.
- 3.212. It is considered that during the decommissioning phase of the Proposed Development there will be cumulative direct, short-term, temporary effects with an overall **Negligible (adverse)** significance, and therefore **Not Significant** in EIA terms.

Conclusion

- 3.213. In conclusion, **no significant Transport and Access cumulative effects** resulting from the assessment of the projects listed in **Table 2.1** of this document are anticipated during the construction, operation or decommissioning phases.

Air Quality

Introduction

- 3.214. This section of this document provides an update of the potential cumulative effects in combination with the Proposed Development, in relation to Air Quality.

Assessment Approach

- 3.215. Consideration and a review of all shortlisted cumulative projects as per **Table 2.1** of this document has been undertaken as part of this cumulative effects assessment update.
- 3.216. The one potentially significant cumulative impact identified within **Chapter 15: Air Quality** (document reference 6.1.15/ PS-075) was traffic associated with the construction phase of the Proposed Development and cumulative development sites, which has since been revised. As such, consideration has been made to the cumulative construction traffic flows as presented in **Appendix 3- Cumulative Traffic Assessment** of this document.
- 3.217. The same policy and guidance documents that informed the 'Assessment Methodology' section as presented within **Chapter 15: Air Quality** (document reference 6.1.15/ PS-075) have been used to determine the cumulative assessment approach.

Baseline Conditions

- 3.218. The 'Baseline Conditions' section of **Chapter 15: Air Quality** (document reference 6.1.15/ PS-075) remains valid, however there has since been additional monitoring data up to 2022 released by South Holland District Council²¹ (SHDC).
- 3.219. The pollutant concentrations recorded in 2020 and 2021 are not considered to be representative of "normal" air quality conditions due to government enforced lockdowns during the COVID-19 pandemic. Whilst it is expected that as a result of the COVID-19 pandemic behaviours will change in the future, the impact of this on air quality long-term is currently unknown and therefore the use of 2020 and 2021 data will be omitted from any analysis but has been included for information. Data for 2022 are considered the most recent and representative data for the baseline conditions.
- 3.220. **Table 3.14** and **Table 3.15** present the most recent automatic monitoring data and passive diffusion tube data, respectively.

The most recent available monitoring data does not change the outcome of the 'Baseline Conditions' section as presented within **Chapter 15: Air Quality** (document reference 6.1.15/ PS-075) and all pollutants remain below their respective Air Quality Objectives (AQO). It should be noted that at all monitoring locations presented, pollutant concentrations decreased in 2022 when compared to the previous baseline year of 2019.

21 South Holland District Council (2023) Annual Status Report 2023 – [online], (Last accessed: 23/10/2023), Available at: http://shollandair.aeat.com/Reports/21751_24783_South_Holland_2023_ASR_v2_FINAL.pdf

Table 3.14– Automatic Monitoring Data ($\mu\text{g}/\text{m}^3$)

Automatic Monitoring Station and Distance (km) from Proposed Development (approx.)	Air Quality Objective (AQO)	2015	2016	2017	2018	2019	2020	2021	2022
NO₂									
CM1 (SHDC), Spalding Monkhouse School, 16.2 km, Urban Background	Annual mean ($\mu\text{g}/\text{m}^3$)	10.5	12.7	10.8	9.4	9.3	8.5	8.7	8.9
	Number of hours with concentrations $>200 \mu\text{g}/\text{m}^3$	0	0	0	0	0	0	0	0
PM₁₀									
CM1 (SHDC), Spalding Monkhouse School, 16.2 km, Urban Background	Annual mean ($\mu\text{g}/\text{m}^3$)	15.4	13.5	11.8	13.1	13.7	10.8	9.0	11.5
	Number of days with concentrations $> 50 \mu\text{g}/\text{m}^3$	1	2	0	1	0	0	0	0

Table 3.15– Diffusion Tube Monitoring Data ($\mu\text{g}/\text{m}^3$)

Diffusion Tube ID	Diffusion Tube Name	Site Type	Distance from Proposed Development (km)	2019	2020	2021	2022
Heckington (NKDC)	Heckington	Kerbside	4.3	17.3	14.6	-	-
SH 11 (SHDC)	A52 Donington	Roadside	2.5	15.5	12.7	14.3	14.4

Assessment of Likely Cumulative Effects

- 3.221. The impacts of vehicle emissions (NO₂, PM₁₀ and PM_{2.5}) associated with the construction of the Proposed Development, as well as the listed cumulative development sites, have the potential to affect existing sensitive receptors located at the roadside of the proposed construction route, along the A17, for the anticipated construction period of 30 months.
- 3.222. The Transport Consultants for the project have provided traffic flows for the construction phase of the Proposed Development and the cumulative development sites, as detailed in the Transport and Access Chapter of this Technical Note. Construction vehicles will be routed along the following road network which will also be utilised by other cumulative development sites, as outlined within **Appendix 3- Cumulative Traffic Assessment:**
- A17 (west and east of the proposed construction access)
 - A52 (south of National Grid haul road)
 - Cowbridge Road
 - Bicker Drove; and
 - Vicarage Road
- 3.223. The cumulative developments that have been considered in conjunction with the Proposed Development for crossover of the construction periods are as follows:
- Boston Alternative Energy Facility (Ref: EN010095) (Site 3)
 - Land North of Roman Bank and East of Middle Marsh Road at Red House Farm, Holbeach Bank (Ref: HO9-0132-23) (Site 9)
 - Beacon Fen Energy Park (Ref: EN010152) (Site 12).
- 3.224. Cumulatively with Sites 3, 9 and 12, there are predicted to be 243 light duty vehicles (LDV) and 185 heavy duty vehicles (HDV) annual average daily traffic (AADT) flow along the A17.
- 3.225. Along the A52 to Cowbridge Road, Bicker Drove and Vicarage Drove, there is anticipated to be a cumulative AADT increase of 10 LDV's and 20 HDVs associated with the Bicker Fen Substation extension works, in conjunction with construction routing for Site 12.
- 3.226. With reference to the Environmental Protection UK (EPUK) and Institute of Air Quality Management²² (IAQM) indicative screening criterion to determine potential for significant impacts of >500 LDV AADT outside of an Air Quality Management Area (AQMA), the predicted cumulative LDV AADT is below this criterion.

²² Environmental Protection UK and Institute of Air Quality Management (2017), Land-Use Planning & Development Control: Planning For Air Quality v1.2 – [online] (Last accessed: 23/10/2023), Available at: iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

- 3.227. The predicted cumulative increase along the A52 to Cowbridge Road, Bicker Drove and Vicarage Drove, is anticipated to fall below the EPUK and IAQM screening criterion of >100 HDV AADT outside of an AQMA. Therefore, the impacts on air quality with the cumulative trip generation from site 12 along the A52 are considered to be not significant.
- 3.228. The use of the Triton Knoll access track by NGET for all trips associated with the construction of the extension of National Grid Bicker Fen Substation for the Proposed Development has been assessed at Deadline 5 and a separate Technical Note (ES Transport and Access Technical Note – Assessment of Triton Knoll Access Track, Doubletwelves Drove and Bicker Drove) has been submitted. This confirms that NGET reserve the right to use the existing route via the A52, and links four to six (as stated in Table 3.13) in the event of an emergency or Triton Knoll access track being blocked, but that otherwise links four to six would not be used for the Project during the construction phase of the extension to the Bicker Fen Substation.
- 3.229. The same cumulative AADT increase of 10 LDVs and 20 HDVs associated with the Bicker Fen Substation extension works, in conjunction with construction routing for Site 12 for the A52 to Cowbridge Road, Bicker Drove and Vicarage Drove, would apply if the Triton Knoll access track is used instead for construction traffic. This cumulative increase is anticipated to fall below the EPUK and IAQM screening criterion of >100 HDV AADT outside of an AQMA. Therefore, the impacts on air quality with the cumulative trip generation from Site 12 if considered along the Triton Knoll access track are considered to be not significant.
- 3.230. However, the predicted cumulative HDVs along the A17 are expected to be above the EPUK and IAQM screening criterion of >100 HDV AADT outside of an AQMA. With regard to the indicative criteria for the potential impacts to air quality, the EPUK and IAQM guidance states:
- “The criteria provided are precautionary and should be treated as indicative. They are intended to function as a sensitive ‘trigger’ for initiating an assessment in cases where there is a possibility of significant effects arising on local air quality. This possibility will, self-evidently, not be realised in many cases. The criteria should not be applied rigidly; in some instances, it may be appropriate to amend them on the basis of professional judgement, bearing in mind that the objective is to identify situations where there is a possibility of a significant effect on local air quality.”*
- 3.231. When considering the potential for a significant impact to air quality as a result of construction traffic associated with the Proposed Development and cumulative development sites, there are other factors which should be taken into consideration.
- 3.232. Firstly, as outlined in the ‘Baseline Conditions’ section of **Chapter 15: Air Quality** (document reference 6.1.15/ PS-075), as well as updated in the above section, baseline concentrations are well below their respective AQOs. The annual mean NO₂ concentration recorded at passive diffusion tube SH11 in 2022, located 1.5 m from the kerb on the A52 in Donnington, was 14.4 µg/m³, which is 36% of the AQO. Therefore, before any exceedance of the annual mean NO₂ AQO is experienced an increase of 25.6 µg/m³, or 64% of the AQO, would be required, which is a considerable amount of headroom and unlikely to be achieved by the cumulative traffic flows.
- 3.233. In addition, as outlined in the ‘Baseline Conditions’ section of **Chapter 15: Air Quality** (document reference 6.1.15/ PS-075), Defra predicted background annual mean concentrations in the vicinity of the Proposed Development in the earliest anticipated construction year of 2025 are shown in **Table 3.16**.

Table 3.16– Estimated annual mean background concentrations in 2025 ($\mu\text{g}/\text{m}^3$)

Pollutant	Annual Mean AQO	Background Concentration ($\mu\text{g}/\text{m}^3$)	As a % of AQO
NO ₂	40	6.7	17%
PM ₁₀	40	15.6	39%
PM _{2.5}	20	8.3	42%

3.234. Given the monitored concentrations and predicted future background concentrations, in line with the EPUK and IAQM impact descriptors, a change in concentration of greater than 10% of the relevant air quality objective (a moderate adverse impact) would constitute a significant impact. This level of change is considered very unlikely in this instance given the predicted cumulative development traffic flows presented above.

3.235. In addition, there are a limited number of highly sensitive receptors, such as residences, situated on the A17, Cowbridge Road, Bicker Drove and Vicarage Road construction routes and the majority are set back by at least 5m, including the sensitive receptor locations on the A52. This will aid in dispersion of pollutants and reduce the contribution of the A17 and A52 at the building facades.

3.236.

3.237. As such, there is not expected to be any change to the outcome of the 'Cumulative and In-combination Effects' section within **Chapter 15: Air Quality** (document reference 6.1.15/ PS-075). In summary, it is not considered likely that there will be **no significant adverse cumulative effects** from construction traffic associated with the Proposed Development and other cumulative development sites considered.

Mitigation and Enhancement

3.238. No further mitigation and enhancement measures are anticipated, and the 'Mitigation Measures' section titles for air quality in **Chapter 15: Air Quality** (document reference 6.1.15/ PS-075) remain valid and unchanged.

Residual Cumulative Effects

3.239. There are expected to be **no residual significant cumulative** effects to air quality as a result of construction traffic, which remain the same as the conclusions drawn in the 'Cumulative and In-combination Effects' section of **Chapter 15: Air Quality** (document reference 6.1.15/ PS-075).

Conclusion



3.240. In conclusion, **no significant cumulative effects** resulting from the assessment of the cumulative impacts of the projects listed in **Table 2.1** of this document and the Proposed Development are anticipated during the construction, operation or decommissioning phases with regard to air quality.

Land Use and Agriculture

Introduction

- 3.241. The assessment of cumulative effects has been updated in respect of land use and agriculture to reflect both additional schemes coming forward, and the addition of information now available on other schemes under consideration.
- 3.242. In respect of any cumulative impact, it is noted at the outset that whilst large areas of agricultural land are involved in the cumulative assessment, the assessment of effect needs to focus on the areas of agricultural land that will be “lost”. That assessment draws on the definition from the IEMA Guide²³. A “loss” is “a permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading)”. (IEMA Guide, Table 3).
- 3.243. Temporary developments, IEMA Guide Table 3 records, “can result in a permanent impact if resulting disturbance or land use change causes permanent damage to soils”.
- 3.244. IEMA Guide section 7.2 also notes that “temporary development on agricultural land and soils (e.g. solar developments) which may be in operation more than 40 years, presents a risk of damage to soils not only during construction but also at decommissioning”. Therefore, the update focuses on the information in respect of those two key stages.

Assessment Approach

- 3.245. The assessment approach is unchanged from the ES **Chapter 16: Land Use and Agriculture** (document reference 6.1.16/ APP-O69).

Baseline Conditions

- 3.246. Baseline conditions have not altered from the ES **Chapter 16: Land Use and Agriculture** (document reference 6.1.16/ APP-O69).

Assessment of Likely Cumulative Effects

- 3.247. **Table 3.17** lists the 17 identified cumulative schemes shown within Table 2.1 and shows (if known) the land quality for each of the cumulative sites. For many of the schemes land quality information has had to rely on Provisional Agricultural Land Classification mapping as due to the individual project timelines some have not yet undertaken detailed ALC surveys, or these have not been shared within the general public domain.
- 3.248. Most of the schemes involve land provisionally shown as Grades 1 and 2 mixed with undifferentiated Grade 3. The Grade 3 areas are not broken down between Subgrades of 3a and 3b, and only site survey will enable that (plus the Grade 1 and 2) areas to be assessed currently.

²³ Institute of Environmental Management and Assessment (IEMA) Guide: A New Perspective on Land and Soil in Environmental Impact Assessment (February 2022)

- 3.249. Where an ALC detailed survey has not been conducted and subgrade information cannot be provided (i.e., Grade 3a/3b), the Applicant has assumed the land falls into subgrade 3a (i.e., BMV). In some instances, there is no information on the area of BMV land that will be sealed over or temporarily lost for the lifetime of the solar farm. In this situation it is stated as 'unknown' within Table 13.17. However, it is likely a minimal amount of land (equal or less than 1%) will be lost, ranging to potentially no permanent land loss as has been shown consistently across ground mounted solar projects across the UK through the TCPA process. It should be noted that the proposals for DCO applications are subject to change, particularly those in the early stages, and this will likely have an effect on figures estimated below. Information provided in this report is correct as of February 2024.
- 3.250. **Table 3.17** indicates the total Order Limit areas/ TPCA application areas and potential area of the main sites to be used (i.e., area with solar PV panels) for each project. Generally, within the DCO process, Order Limit areas given for each project include cable route corridors. The impact on the land used for the cable route is considered temporary and will not be lost from ongoing agricultural activity. Existing land uses such as arable agriculture is expected to continue on each project once the cable has been laid as seen with schemes local to Heckington Fen including the Triton Knoll and Viking Link projects.
- 3.251. Consideration has been given to the cumulative impact of using agricultural land within Lincolnshire for solar farm development

Table 3.17: Cumulative Lincolnshire Land Use

No.	Name of Scheme	Area of Site/ Order Limits (ha)	Area of Solar PV panels (excluding cable route corridor) (ha)	Temporary change of use of BMV land within the Solar PV panel area (ha and %)	Sealed over or loss of BMV land within the Solar PV panel area (ha and %) for the duration of the Proposed Development
1	Vicarage Drove	80 ha	80ha	80ha (100%)	0.8ha (1%)
2	Land West of Cowbridge Road, Bicker Fen, Boston	110 ha	110ha	110ha (100%)	1.1ha (1%)
3	Boston Alternative Energy Facility	26.8 ha	Provisional Grade 1: 26.8ha (100%) – energy from waste	n/a	n/a
4	Mallard Pass Solar Farm This application is split over Lincolnshire and	852 ha (327.4ha of the order limits is	531ha	216ha (41%) 101ha (12% within Lincolnshire County)	4.2ha (0.7 ²⁴ %)

²⁴ Data taken from Mallard Pass submitted documentation (REP3-031) – which states that in ES Chapter 12, Table 12.1 (APP-042) 4.2ha of BMV land within the site will be lost.

No.	Name of Scheme	Area of Site/ Order Limits (ha)	Area of Solar PV panels (excluding cable route corridor) (ha)	Temporary change of use of BMV land within the Solar PV panel area (ha and %)	Sealed over or loss of BMV land within the Solar PV panel area (ha and %) for the duration of the Proposed Development
	Rutland County Council's areas	within Lincolnshire)			
5	Cottam Solar Project²⁵	1451 ha	1179ha (across Cottam sites 1,2,3a and 3b)	4ha (0.3%)	4ha (0.3%) ²⁶
6	Gate Burton Energy Park²⁷	824 ha	652ha	73.6ha (11%)	2ha (0.3%)
7	West Burton Solar Project²⁸	886ha	757.8ha (across West Burton 1, 2 and 3 sites)	199.5ha (26.4%)	2ha (0.3%)
8	Land at Little Hale Fen	77 ha	77ha	77ha (100%)	0.7ha (1%)
9	Land North of Roman Bank and East of Middle Marsh Road at Red House Farm, Holbeach Bank	152 ha	152ha	152ha (100%)	1.52ha (1%)
10	Temple Oaks Renewable Energy Park²⁹	350 ha	280ha	0ha (0%) ³⁰	0ha (0%)
11	Tillbridge Solar Project³¹	Entire Order Limits not	900	68ha (7.5%)	11ha (1.2%)

²⁵ Information taken from 6.2.9 ES Chapter Soils and Agriculture (APP/ 054) of Cottam Solar Project Fam DCO application.

²⁶ REP_OIO of Cottam submitted documents to the ExA, Table 19.2 and paragraph 19.7.7 states that 47.9ha of land will be used for the substation, BESS and access tracks which will not be used for the continued agricultural use during the lifetime of the Scheme. Of this 4ha is BMV which will be used for access tracks. This Gate Burton Interrelationship Report has been drafted in collaboration with the applicant for Tillbridge Solar.

²⁷ Information taken from 3.1 Environmental Statement Volume 1 Chapter 12: Socio Economics and Land Use (APP/ 021) of Gate Burton Energy Park DCO application. These areas remain accurate and have been cross referenced against the submissions made at the various Deadlines within the ExA hearing process for the Gate Burton Application.

²⁸ Information taken from 6.2.9 Environmental Statement Chapter 19: Soils and Agriculture (APP/057) of West Burton Solar Project DCO application.

²⁹ Information taken from Scoping Report of Temple Oaks Renewable Energy Park DCO application.

³⁰ Total area of Order Limits identified as Grade 3b from Detailed Site Survey (paragraph 70, page 11 of Scoping Report)

³¹ Information taken from two sources: Chapter 14 Socio-Economics and Land Use of the Preliminary Environmental Information Report (PEIR) on the Tillbridge Solar Project Applicant website Interim detailed ALC survey report has been undertaken for the areas of predicted BMV land take. REP5-O42 from the Gate Burton submitted documents to the ExA: Interrelationship Report

No.	Name of Scheme	Area of Site/ Order Limits (ha)	Area of Solar PV panels (excluding cable route corridor) (ha)	Temporary change of use of BMV land within the Solar PV panel area (ha and %)	Sealed over or loss of BMV land within the Solar PV panel area (ha and %) for the duration of the Proposed Development
		known as cable route corridor to be determined.			
12	Beacon Fen Energy Park ³²	1540ha ³³	512ha	242.68ha (47.4%) ³⁴	20.6ha ³⁵ (8.4%)
13	Springwell Solar Farm ³⁶	1458.9 ³⁷ ha	815.7ha	354.9ha ³⁸ (43.5%)	0ha (0%) ³⁹
14	Fosse Green Energy	Entire Order Limits not known as cable route corridor to be determined.	1003ha	Estimated 1003ha (100%) ⁴⁰	10ha (0.1%)
15	One Earth Solar Farm	Estimation of 1500 ha	1500ha across Lincolnshire and	1455ha (97%) ⁴² across Lincolnshire and	2.5ha (0.2%)

states that total area of the Tillbridge is site 1,400ha with 900ha developable area and 500ha for ecology, landscape & heritage offsets. The Gate Burton Interrelationship Report has been drafted in collaboration with the applicant for Tillbridge Solar.

³² Information taken from PEIR of Beacon Fen Energy Park DCO application. ALC survey has been undertaken of solar area.

³³ Information taken from paragraph 14.4.1 of Chapter 14 Soils and Agriculture of Beacon Fen Energy Park PEIR.

³⁴ Information taken from paragraph 14.5.3 of Chapter 14 Soils and Agriculture of Beacon Fen Energy Park PEIR. shows 47.4% of the solar array site (512ha) is BMV. This equates to 242.68ha.

³⁵ Information taken from paragraph 14.6.15 of Chapter 14 Soils and Agriculture of Beacon Fen Energy Park PEIR – “The total land take that is considered as long-term temporary (permanent in worst case) is up to 10.6 ha in total for the BESS and Substation, and it is assumed that less than 10 ha of land will be required to support the access tracks and construction compounds.”

³⁶ Information taken from the Preliminary Environmental Information Report (PEIR) of Springwell Solar Farm DCO application

³⁷ PEIR notes the 1458.9ha extends across the three parcels (Springwell West, Springwell Central and Springwell East). The cable route corridor is not included, it is to be surveyed prior to the ES.

³⁸ Information taken from Table 10.11 of Chapter 10 Land Use and Soils of Springwell Solar Farm PEIR.

³⁹ Information taken from Table 10.12 of Chapter 10 Land Use and Soils of Springwell Solar Farm PEIR – “retaining all fields comprising solely of Grade 1 and 2 land and prioritising the use of non-BMV land for the creation of permanent habitats to avoid any permanent loss of high quality agricultural land.”

⁴⁰ No detailed ALC survey provided in the Scoping Report. Based on National level Provisional ALC data it is a mixture of Grades 2 and 3 land. For the purpose, of this it is assumed the Grade 3 area is subgrade 3a.

⁴² Based on National level Provisional ALC data it is estimated 1603ha (97%) is Grade 3 land, and 43ha (3%) Grade 4 land. For the purpose, of this assessment, it is assumed the Grade 3 area is subgrade 3a.

No.	Name of Scheme	Area of Site/ Order Limits (ha)	Area of Solar PV panels (excluding cable route corridor) (ha)	Temporary change of use of BMV land within the Solar PV panel area (ha and %)	Sealed over or loss of BMV land within the Solar PV panel area (ha and %) for the duration of the Proposed Development
	This application is split over Lincolnshire and Nottinghamshire County Council's areas		Nottinghamshire County Council areas 250ha ⁴¹ within Lincolnshire County	Nottinghamshire County Council areas 250ha (17%) within Lincolnshire County	
16	Lincolnshire Reservoir	972 ha	972ha (100%)	n/a	n/a
17	Land to the East and West of Mareham Lane, Sleaford	73 ha	73ha	0ha (0%) ⁴³	0ha (0%)

- 3.252. The Lincolnshire Reservoir project and the Boston Alternative Energy Project will require the land on which they are built to be permanently removed from agricultural activity. That involves a total of 998.8ha of agricultural land. No ALC soil survey work has been completed for either of these projects. The data that has been presented for these proposals show that the land is provisionally Grade 1 (Boston Alternative Energy Facility), Grade 2 and undifferentiated Grade 3 (Lincolnshire Reservoir). The proportion of BMV within the provisional Grade 3 land at the Lincolnshire Reservoir is not known.
- 3.253. This permanent removal of the land from agriculture will result in a change of use for land where the Lincolnshire Reservoir and Boston Alternative Energy Facility are proposed as both will require the land to be taken out of agriculture. As a Development Consent Order has been granted for the Boston Alternative Energy Facility the permanent loss and change of use of 26.8ha of Grade 1 land was deemed acceptable within the planning balance. The acceptability of the potential loss of 972ha of BMV agricultural land for the Lincolnshire Reservoir will have to be assessed when detailed environmental assessment has taken place. There is no public information at this time on when the EIA for this scheme will be published. However, construction is proposed to commence in 2029.
- 3.254. The remaining 15.No cumulative sites are proposed solar developments. From the known data that is available for these solar farm proposals, a cumulative total of 9,025.6ha of agricultural land is within the area allocated for solar PV panels for Lincolnshire. Of this, 2,715.7ha is of BMV quality.
- 3.255. As detailed design has not been submitted for any of these solar farm applications it is not possible to determine a definitive area of land that will be disturbed for tracks, substations, energy storage areas (if being proposed). The assessment of the Heckington Fen Proposed

⁴¹ Estimation of area of land within Lincolnshire County Council is estimated by Pegasus Group using ArcGIS Pro

⁴³ Total area of red line boundary identified as Grade 3b from Agricultural Land Classification Survey 7th October 2022 – (NKDC reference: 23/1419/FUL)

Development has shown that in total there will be an estimated area of 3ha of BMV land sealed over or 'lost' for the duration of the Proposed Development. This 3ha equates to 1.1% of the BMV land within the Proposed Development being sealed over or 'lost' for the duration of the Proposed Development. As can be seen from **Table 3.17** some of the solar farm sites have high percentages of BMV land within their Order Limits and application boundaries. To allow for this the amount of land which has been assumed likely to be disturbed for tracks, substations, battery storage areas etc is expected to be 1% for any sites where the detail is not known. For the Temple Oaks Site their public documentation states that there is no BMV land within the site, so this 1% has **not** been applied for the Temple Oaks site. The combining of the known areas of BMV land that would be sealed over or lost for the duration of the proposed developments and the 1% loss from all 15No. cumulative solar sites is therefore estimated to be approximately 60.42ha of BMV land across Lincolnshire.

- 3.256. Collectively over the 15No. cumulative solar farms there could be a temporary disturbance of up to 60.42ha of BMV land. This disturbance will be temporary and will in most cases be restored fully at decommissioning, such that there is no permanent loss. When the estimated area of 3ha of BMV land sealed over or 'lost' for the duration of the project at Heckington Fen is added, the total cumulative temporary disturbance is 63.42ha. Therefore, whilst the total exceeds 20ha and under the IEMA guide would fall into the category of major to moderate adverse effects, further consideration needs to be given to this figure. The cumulative ES assessment then takes this headline figure of 63.42ha and considers it against the total area of BMV within Lincolnshire. Across Lincolnshire there is estimated to be 402,900ha (71.2%) of BMV land⁴⁴. The temporary change of 63.42ha of BMV land is equivalent of 0.01% of BMV land in Lincolnshire. When this temporary change (i.e. not permanent sealing or downgrading) is placed into context with the BMV resource within the County, the cumulative effect would be **not significant** in EIA terms.
- 3.257. The use of land for solar energy production is usually undertaken in combination with an ongoing agricultural use, most often in the form of grazing of sheep. This combined land use is now common practice across the UK. Therefore, there is not likely to be a significant change in the land use for these cumulative solar schemes, with some form of agricultural activity likely to be remaining on the solar sites for their operational lifetimes.
- 3.258. There may be a change in the type of crops produced and agricultural enterprises undertaken on the land used by the operators of the cumulative solar farm sites, but the way land is farmed is not subject to planning control. How the land is farmed is a management choice of the landowner. It can be influenced by market factors. Economic factors are a significant driving force, but disease control and limitations, personal choices, rotational limitations, and other factors all influence the choice of cropping, and hence the type of agricultural use (e.g. cereals, sheep, grass etc). There is no requirement, or financial encouragement from Government, to farm agricultural land in a particular way for producing food. This was reiterated by DEFRA in December 2022 in the Government's stated position on food security, which stated that *"the UK has a large and highly resilient food supply chain. Our high degree of food security is built on supply from diverse sources: strong domestic production as well as imports through stable trade routes."* Therefore, utilising areas of agricultural land (both BMV and poor quality) assessed with the short-listed cumulative solar

⁴⁴ Table 16.4 of Chapter 16: Land Use and Agriculture (Document Reference: 6.1.16/ REP2-028)

farm sites does not result in any significant adverse impact, either environmental or economic.

- 3.259. Most Solar PV sites are temporary developments and are therefore reversible. This is the case for all of the solar sites assessed within the cumulative assessment. To that extent there is no permanent “loss” of agricultural land from these solar developments, by way of sealing or downgrading. It is predicted that it is likely to be capable of restoring all land within the cumulative solar farms, back to comparable ALC quality on decommissioning, such that very little, if any, BMV land will be permanently lost. This would be achieved through the implementation of Soil Management Plans for the construction and decommissioning of the cumulative solar farms. Therefore, no predicted adverse impact of the decommissioning process for the cumulative solar farm sites.
- 3.260. The updated cumulative sites assessment has assessed as far as reasonably possible, based on the limitations in the data available the Tier 2 and 3 sites, has considered the loss of agricultural land from the operation of the cumulative sites. This has shown that the operation of the 15No. cumulative solar sites would have low magnitude of change on the BMV resource which has medium sensitivity within Lincolnshire. It can therefore be concluded that cumulative impact for the solar farms on the loss of BMV land in Lincolnshire would have a **minor to moderate effect** which is **not a significant impact**. The cumulative assessment has shown that the permanent loss of 998.8ha BMV land for the Lincolnshire Reservoir and the approved Boston Alternative Energy Facility would result in a major adverse significant impact on the loss of BMV land within Lincolnshire.

Mitigation and Enhancement

- 3.261. Due to the standalone nature of the Lincolnshire Reservoir there is no mitigation or enhancement that the Proposed Development can offer to reduce this significant cumulative impact. The proposal for the Lincolnshire Reservoir is in its very early stages as shown in Appendix 2.3 (document reference: 6.3.2.3/ ExA.ESTN-Cumulative-D2.V1) with to date no Scoping Report submitted to the Planning Inspectorate. Many factors will need to be assessed to determine if this proposed location is a suitable site for a reservoir.
- 3.262. Even if all the proposed cumulative solar farms and the Proposed Development were not granted consent the retention of approximately 60.4ha of BMV land in Lincolnshire would not have a direct effect on reducing the BMV lost from the development of the Lincolnshire Reservoir site. The impact of the Lincolnshire Reservoir would still be a major adverse permanent effect and therefore be a significance impact as a standalone project.
- 3.263. Details on the final design of the solar farms are not available currently. However, reasonable mitigations would be to apply similar design principles to those used at Heckington Fen. These design principles aim to minimise, where reasonably possible, the use of BMV land for structures such as access tracks, onsite substation, operational compounds and EES areas. Such design considerations will minimise the areas of land sealed off and lost for the lifetime of the proposed cumulative solar developments. It would also be expected that each of these solar farms will be required to draft, and follow, a Soil Management Plan for construction, operation and decommissioning. The details within the Outline Soil Management Plan (document reference 7.15) would be agreed with Natural England, as per Heckington Fen, to ensure that the necessary precautions are in place to protect the soil’s structure throughout the phases of the solar developments.

- 3.264. Other cumulative solar farms which are using BMV land may choose to operate ongoing agricultural practices on the land, such as pastoral farming in the form of sheep grazing, to enable ongoing agricultural practices to co-exist with energy generation from solar panels. Such a mitigation is being proposed at Heckington Fen and this measure is being secured via the draft DCO.

Residual Cumulative Effects

- 3.265. The residual cumulative effect is **not significant**, except for the Lincolnshire Reservoir which potentially could be significant due to the permanent loss of over 900ha of BMV land if it was granted consent.

Conclusion

- 3.266. The additional cumulative sites result in greater land use change, but that is not an environmental impact.
- 3.267. There are no additional significant cumulative impacts.

Glint and Glare

Introduction

- 3.268. This section of this document provides an update of the potential cumulative effects in combination with the Proposed Development, in relation to Glint and Glare.

Assessment Approach

- 3.269. Consideration and a review of all shortlisted cumulative projects as per **Table 2.1** of this document has been undertaken as part of this cumulative effects assessment update.
- 3.270. From **Table 2.1**, only Site 12, 'Beacon Fen Energy Park' required further assessment.
- 3.271. In order to assess the cumulative Glint and Glare effects, the same 'Assessment Methodology' has been applied as is set out in **Chapter: 17 Glint and Glare** (document reference 6.1.17/APP-070) of the submitted ES.

Baseline Conditions

- 3.272. The baseline conditions, as set out in the 'Baseline Conditions' section of **Chapter: 17 Glint and Glare** (document reference 6.1.17/APP-070), remain valid.

Assessment of Likely Cumulative Effects

- 3.273. Cumulative sites in **Table 2.1** that were identified as lying in excess of 5km from the Energy Park, have been considered but in each case were eliminated as receptors with potential intervisibility to both sites were very limited, and at these distances, no cumulative glint effects are expected.
- 3.274. The ForgeSolar computer model can only directly model cumulative effects for solar developments that are located completely within 5km of the Energy Park. Although some of the southern sections of the Beacon Fen site are less than 5km from the Heckington Fen site, the majority of that proposed development lies more than 5km from the Energy Park and cannot be directly assessed within the computer model.
- 3.275. In the absence of mitigation at the Energy Park, cumulative glint effects would theoretically be possible where glint from other solar developments and other reflective surfaces in the environment collectively affect the same receptor. However, since the Energy Park at Heckington Fen is appropriately screened to prevent most impacts at surrounding ground-based receptors and given the flat expansive landscape within which it is situated, it should be possible to eradicate almost all glint effects, except possibly from a few upper storey windows with views down into the Energy Park. With almost all glint effects from the Energy Park screened from the assessed receptors, cumulative effects cannot occur as a result of interaction with other glint sources.
- 3.276. In the case of cumulative glint effects from Beacon Fen, both the Proposed Development and the Beacon Fen development are to be well screened and, as a result of this screening, glint effects are not predicted. Therefore, there will be no cumulative glint at receptors near either site, and cumulative impacts are assessed as being negligible and **Not Significant**.

- 3.277. In relation to aviation receptors, the direct glint risk posed to aircraft and air traffic control towers from the development of the Energy Park has been assessed as negligible and Not Significant. In order to receive glint, the sun and the receptor must be in alignment with the panels and glint effects will usually only persist for a short period until either the sun has moved position in the sky, or in the case of a plane, it has flown to a slightly different position in the sky, breaking the alignment. For cumulative effects to occur for a passing aircraft, the alignment between the sun, panel and aircraft must deliver glint whilst a simultaneous alignment of the sun, panels at the cumulative site and the aircraft also exists. Whilst this is theoretically possible with differing panel angles, in practice the separation between the sites and the similarity between panel inclinations and orientations at those differing sites means that such co-alignment is highly unlikely. The risk of cumulative glint on aviation receptors from multiple solar developments is considered to be negligible and **Not Significant**.

Mitigation and Enhancement

- 3.278. No further mitigation and enhancement measures, over and above those already proposed, are anticipated, and the 'Mitigation Measures' section of **Chapter: 17 Glint and Glare** (document reference 6.1.17/APP-070) remains valid and unchanged.
- 3.279. Other solar farms existing or consented in the area (as detailed in **Table 2.1**) are sufficiently far away that there will not be any cumulative glint effects present, even without mitigation. Once the screening mitigation has been applied to the Energy Park most receptors are predicted to receive no glint effects and so any potential for cumulative effects involving the Energy Park would cease.

Residual Cumulative Effects

- 3.280. The residual cumulative effects of Glint and Glare, remain, negligible and Not Significant, as per the conclusions drawn in the 'Assessment of Likely Cumulative Effects' in the Glint and Glare section of this document (paragraph 3.152).

Conclusion

- 3.281. In conclusion, **no significant cumulative effects** resulting from the assessment of the projects listed in **Table 2.1** of this document are anticipated during the construction, operation or decommissioning phases.

Miscellaneous Issues

Introduction

- 3.282. This section of this document provides an update of the potential cumulative effects in combination with the Proposed Development, in relation to Miscellaneous Issues including: Major Accidents and Disasters, Waste, Electric, Magnetic and Electromagnetic Fields, and Telecommunications, Television Reception and Utilities.

Assessment Approach

- 3.283. Consideration and a review of all shortlisted cumulative projects as per **Table 2.1** of this document has been undertaken as part of this cumulative effects assessment update.
- 3.284. For Major Accidents and Disasters, the same shortlisted major accidents and disasters to be considered are applied in this cumulative effects assessment update, as per 'Assessment Methodology' section title in **Chapter 18: Miscellaneous Issues** (document reference 6.1.18/PS-077). These include: Health and Safety at Work, Fire, Rail accidents, Utilities failure (gas, electricity, water, sewage, oil, communications), and Criminal Damage.
- 3.285. For Waste, the same 'Assessment Methodology' section title in **Chapter 18: Miscellaneous Issues** (document reference 6.1.18/PS-077) applies.
- 3.286. For Electric, Magnetic and Electromagnetic Fields, the same 'Assessment Methodology' section title in **Chapter 18: Miscellaneous Issues** (document reference 6.1.18/PS-077) applies. Electric fields are not considered as underground cables produce no external electric field. Magnetic fields are considered, but only for cabling systems above 132kV as voltages up to and including 132kV are not capable of exceeding ICNIRP exposure guidelines⁴⁵. Additionally, it is pertinent to reconfirm magnetic fields are not simply added together where they may be generated by separate sources and are typically dominated by the biggest source⁴⁶.
- 3.287. Six projects (No. 1, 2, 8, 10, 12 and 17 of **Table 2.1**) in the updated cumulative shortlist are identified as connecting into National Grid Bicker Fen Substation and could have potential for associated cabling interacting with the Proposed Development. However, four of the projects (No. 1, 2, 8, 17 of **Table 2.1**) are solar schemes less than 50MW, with any potential underground cabling to National Grid Bicker Fen Substation with voltages below 132 kV and are therefore discounted of any further assessment in relation to magnetic fields. Beacon Fen Energy Park and Temple Oaks Renewable Energy Park as DCO projects have the potential to use a cabling system above 132 kV (although this is not confirmed in the Scoping Report for Temple Oaks Renewable Energy Park and PEIR for Beacon Fen Energy Park⁴⁷ for the two projects as the most up to date public information to be relied upon (correct as of February 2024)), and therefore as a worst-case scenario are assessed for magnetic field effects below.

⁴⁵ ICNIRP (1998) ICNIRP Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic and Electromagnetic Fields (up to 300 GHz).

⁴⁶ National Grid Website (EMFs.info) (2018), Adding fields together.

⁴⁷ Information reviewed from the Scoping Report of Temple Oaks Renewable Energy Park on the National Infrastructure Planning website, and PEIR for Beacon Fen Energy Park's Applicant website for Statutory Consultation

- 3.288. For Telecommunications, Television Reception and Utilities, the same 'Assessment Methodology' section title in **Chapter 18: Miscellaneous Issues** (document reference 6.1.18/PS-077) applies.

Baseline Conditions

- 3.289. The baseline conditions remain valid as per the 'Baseline Conditions' section titles for Major Accidents and Disasters, Waste, Electric, Magnetic and Electromagnetic Fields, and Telecommunications, Television Reception and Utilities in **Chapter 18: Miscellaneous Issues** (document reference 6.1.18/PS-077).

Assessment of Likely Cumulative Effects

Major Accidents and Disasters

- 3.290. Road Accidents and Safety is set out in the Transport and Access section of this document (paragraph 3.187–3.188). It is anticipated no increase in incidents are associated with the temporary 30 month construction phase of the Proposed Development.
- 3.291. As a result of the distance between the cumulative projects and the Proposed Development, **no significant cumulative effects** resulting from the shortlisted projects in **Table 2.1** of this document are anticipated during the construction, operation or decommissioning phases.

Waste

- 3.292. As per the cumulative effects assessment for Waste in Section 18.4 of **Chapter 18: Miscellaneous Issues** (document reference 6.1.18/PS-077), there is potential for cumulative effects in regard to waste, for the construction and decommissioning phases in particular, if all projects on the shortlist are granted for approval and construction/ decommissioning dates overlap. Cumulative volumes of waste could create pressure on the capacity of local recycling plants or landfill sites.
- 3.293. It is expected that new industry emerging for recycling solar panels, and the resale of any operational infrastructure within this sector is likely to continue grow with the increase in approved solar farms across the UK since 2010. It is assumed waste would be adequately managed, and the revised cumulative shortlist of projects has not caused additional effects not already assessed in **Chapter 18: Miscellaneous Issues** (document reference 6.1.18/PS-077). Therefore, it is anticipated there will be **no significant cumulative effects** resulting from the shortlisted projects in **Table 2.1** of this document during the construction, operation or decommissioning phases.

Electric, Magnetic and Electromagnetic Fields

- 3.294. As a result of the distance between the cumulative projects and the Proposed Development, many of the shortlisted projects will not have associated cabling that interacts with the Proposed Development or connects into National Grid Bicker Fen Substation. Two projects are identified to have potential cumulative project effects in relation to magnetic fields for a cabling system of over 132 kV, including Beacon Fen Energy Park and Temple Oaks Renewable Energy Park, of which are both connecting into National Grid Bicker Fen Substation.

- 3.295. As per paragraph 18.5.31 of **Chapter 18: Miscellaneous Issues** (document reference 6.1.18/PS-077), the highest EMFs produced by underground cables are located directly above the buried cables, and field strength decreases with distance from the source. A 400 kV cable buried at least 1m depth will not breach ICNIRP guidelines for occupational or public exposure, even if a receptor was standing 0m distance from the centreline of the 1m buried cable, as per the assessment of the Proposed Development's use of a 400 kV underground cabling system.
- 3.296. Beacon Fen Energy Park and Temple Oaks Renewable Energy Park will also be subject to compliance with policy to bury underground cables at a suitable depth to ensure neither the occupational nor public limits will be breached in regard to magnetic field exposure, as per the Proposed Development.
- 3.297. As set out in the paragraph 3.284 of this document, magnetic fields are not added together where they may be present from multiple sources, therefore it is anticipated there will be **no significant cumulative effects** resulting from the shortlisted projects in **Table 2.1** of this document during the construction, operation or decommissioning phases.

Telecommunications, Television Reception and Utilities

- 3.298. As a result of the distance between the cumulative projects and the Proposed Development, **no significant cumulative effects** resulting from the shortlisted projects in **Table 2.1** of this document are anticipated during the construction, operation or decommissioning phases.
- 3.299. It is expected that the other cumulative projects would also have no significant effect on telecommunications and television reception and would adhere to the same mitigation as set out in Section 18.6 of **Chapter 18: Miscellaneous Issues** (document reference 6.1.18/PS-077) to reduce the risk of damaging utilities.

Mitigation and Enhancement

- 3.300. No further mitigation and enhancement measures are anticipated, and the 'Mitigation Measures' section titles for Major Accidents and Disasters, Waste, Electric, Magnetic and Electromagnetic Fields, and Telecommunications, Television Reception and Utilities in **Chapter 18: Miscellaneous Issues** (document reference 6.1.18/PS-077) remain valid and unchanged.

Residual Cumulative Effects

- 3.301. The residual cumulative effects of Major Accidents and Disasters, Waste, Electric, Magnetic and Electromagnetic Fields, and Telecommunications, Television Reception and Utilities, remain as per the conclusions drawn in the 'Assessment of Likely Cumulative Effects' in the Miscellaneous Issues section of this document.

Conclusion

- 3.302. In conclusion, **no significant cumulative effects** resulting from the assessment of the projects listed in **Table 2.1** of this document are anticipated during the construction, operation or decommissioning phases.

4. Cumulative Effect Summary

- 4.1. A summary of the potential cumulative effects is set out in **Table 4.1**.
- 4.2. The assessment confirms that the shortlisted cumulative projects introduce one new significant cumulative effects in combination with Heckington Fen Solar Park. This cumulative effect relates to the potential cumulative effect of the loss of BMV land from the operation of the Lincolnshire Reservoir. Based on the assessment the Lincolnshire Reservoir would have this major adverse significant impact on BMV land due to its own development footprint, regardless of the cumulative sites. If un-mitigated by its own design, it would be determined with a residual major adverse significant impact. The Proposed Development would have a minor increase in the cumulative loss of BMV (by c.3ha) but the inclusion of all the other cumulative sites would not lead to a significant increase in the residual adverse impact the proposed Lincolnshire Reservoir has been assessed as having on loss of BMV land within Lincolnshire.
- 4.3. The other conclusions of the cumulative assessment within the ES for the Proposed Development remain valid and unchanged.



Table 4.1: Summary Assessment of Updated Cumulative Project Shortlist (construction, operation and decommissioning)

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
Chapter 6 – Landscape and Visual								
Construction								
Landscape Character: host LT A Reclaimed Fen and its LCA A1 Holland Reclaimed Fen	Beacon Fen Energy Park	Additionality of the proposed Off-site Cable Route Corridor	Temporary	Not Applicable	District	Major Adverse Significant	Not Applicable	Major Adverse Significant
Road receptors: within West Low Grounds and Bicker Fen, and around the existing National Grid Bicker Fen Substation	Beacon Fen Energy Park	Additionality of the proposed Off-site Cable Route Corridor	Temporary	Not Applicable	Local	Major Adverse Significant	Not Applicable	Major Adverse Significant



Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
Decommissioning								
Landscape Character: host LT A Reclaimed Fen and its LCA A1 Holland Reclaimed Fen	Beacon Fen Energy Park	Additionality of the proposed Off-site Cable Route Corridor	Temporary	Not Applicable	District	Major Adverse Significant	Not Applicable	Major Adverse Significant
Road receptors: within West Low Grounds and Bicker Fen, and around the existing National Grid Bicker Fen Substation	Beacon Fen Energy Park	Additionality of the proposed Off-site Cable Route Corridor	Temporary	Not Applicable	Local	Major Adverse Significant	Not Applicable	Major Adverse Significant
Chapter 7 – Residential Visual Amenity								
No significant effects are anticipated in regard to cumulative effects for Residential Visual Amenity.								

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
Chapter 8- Ecology and Ornithology								
Ground nesting birds (including Skylark and Yellow Wagtail)	Entire Shortlist	Permanent loss of habitat	Long term Direct	Medium High	District	Moderate adverse Not Significant	The provision of approximately 138ha of land capable of sustaining ground nesting bird populations, comprising: <ul style="list-style-type: none"> • Approximately 50ha of undeveloped land managed for biodiversity, including ground nesting birds; • Approximately 26ha of grassland in panel array margins, and • Approximately 62ha of off-site arable 	Not Significant

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
							farmland within the Applicant's option. Within which 124 'Skylark Plots' will be incorporated into the cultivation.	
Chapter 9 –Hydrology, Hydrogeology, Flood Risk and Drainage								
No significant effects are anticipated in regard to cumulative effects for Hydrology, Hydrogeology, Flood Risk and Drainage .								
Chapter 10- Cultural Heritage								
No significant effects are anticipated in regard to cumulative effects for Cultural Heritage.								
Chapter 11 – Socio-Economics								
Construction								
North Kesteven	1, 2, 3, 8, 10, 12, 13, 14, 17 +	Increase in local employment	Short term	(1) Medium; (2) Medium	District scale	Significant Beneficial	Outline Supply Chain, Employment and Skills Plan	Significant Beneficial



Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
and Boston districts	Proposed Development							
North Kesteven and Boston districts	1, 2, 3, 8, 10, 12, 13, 14, 17 + Proposed Development	Increase in economic contribution (GVA)	Short term	(1) Medium; (2) High	District scale	Significant Beneficial	None required	Significant Beneficial
North Kesteven and Boston districts	1, 2, 3, 8, 10, 12, 13, 14, 17 + Proposed Development	Increase in accommodation demand	Short term	(1) Medium; (2) Low	District scale	Not Significant	None proposed	Not Significant
Operation								
North Kesteven and Boston districts	1, 2, 3, 8, 10, 12, 13, 14, 17 + Proposed Development	Increase in local employment	Short term	(1) Medium; (2) Low	District scale	Not Significant	Outline Supply Chain, Employment and Skills Plan	Not Significant
North Kesteven and Boston districts	1, 2, 3, 8, 10, 12, 13, 14, 17 + Proposed Development	Increase in economic contribution (GVA)	Short term	(1) Medium; (2) Low	District scale	Not Significant	None required	Not Significant



Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
North Kesteven and Boston districts	1, 2, 3, 8, 10, 12, 13, 14, 17 + Proposed Development	Increase in business rates	Short term	(1) Medium; (2) Medium	District scale	Significant	None required	Significant Beneficial
Decommissioning								
North Kesteven and Boston districts	1, 2, 3, 8, 10, 12, 13, 14, 17 + Proposed Development	Increase in local employment	Short term	(1) Medium; (2) Medium	District scale	Significant Beneficial	Outline Supply Chain, Employment and Skills Plan	Significant Beneficial
North Kesteven and Boston districts	1, 2, 3, 8, 10, 12, 13, 14, 17 + Proposed Development	Increase in economic contribution (GVA)	Short term	(1) Medium; (2) Medium	District scale	Significant Beneficial	None required	Significant Beneficial
North Kesteven and Boston districts	1, 2, 3, 8, 10, 12, 13, 14, 17 + Proposed Development	Increase in accommodation demand	Short term	(1) Medium; (2) Low	District scale	Not Significant	None proposed	Not Significant
Chapter 12– Noise and Vibration								

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
Noise-sensitive receptors along the A17, A52, Cowbridge Road, Bicker Drove and Vicarage Drove	All relevant schemes	Noise from cumulative construction traffic	Temporary, indirect.	Highly sensitive, negligible to minor magnitude of effect.	Not applicable	Negligible to minor, not significant	Use of Triton Knoll access track going to the National Grid Bicker Fen Substation	Negligible, Not Significant
Chapter 13- Climate Change								
Global atmosphere	All projects with the exception of 'Lincolnshire Reservoir (WA010003).	Net GHG emissions as a consequence of operation of the Proposed Development in addition to other solar schemes considered	Permanent Direct	(1) High (2) Expressed as the change in mass of GHG emissions, in units of tonnes of carbon dioxide equivalent (tCO ₂ e)	International	Moderate Beneficial Significant	N/A	Moderate Beneficial Significant

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
Chapter 14 – Transport and Access								
Construction								
Link One – A17 west of proposed temporary construction access	Boston Alternative Energy Facility	Vehicular Traffic Flows	Temporary / Direct	High Negligible	Local	Not Significant	Provision of a Construction Traffic Management Plan	Not Significant
		Accidents and Safety		High Negligible		Not Significant		
	Land North of Roman Bank and East of Middle Marsh Road at Red House Farm, Holbeach Bank	Severance		High Negligible		Not Significant		
		Driver Delay		High Negligible		Not Significant		
	Beacon Fen Energy Park	Hazardous and Dangerous Loads		High Negligible		Not Significant		
		Dust and Dirt		High		Not Significant		



Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
				Negligible				
Link Two – A17 west of proposed construction / operational access	Boston Alternative Energy Facility	Vehicular Traffic Flows	Temporary / Direct	High Low	Local	Not Significant	Provision of a Construction Traffic Management Plan	Not Significant
	Land North of Roman Bank and East of Middle Marsh Road at Red House Farm, Holbeach Bank	Accidents and Safety		High Negligible		Not Significant		
		Severance		High Negligible		Not Significant		
		Driver Delay		High Low		Not Significant		
	Beacon Fen Energy Park	Hazardous and Dangerous Loads		High Negligible		Not Significant		
		Dust and Dirt		High Negligible		Not Significant		

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
Link Three – A17 east of proposed construction / operational access	Boston Alternative Energy Facility	Vehicular Traffic Flows	Temporary / Direct	High	Local	Not Significant	Provision of a Construction Traffic Management Plan	Not Significant
	Land North of Roman Bank and East of Middle Marsh Road at Red House Farm, Holbeach Bank	Accidents and Safety		High		Not Significant		
		Severance		High		Not Significant		
	Beacon Fen Energy Park	Driver Delay		High		Not Significant		
		Hazardous and Dangerous		High		Not Significant		
		Dust and Dirt		High		Not Significant		
			Negligible					

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
<u>Link Four – Cowbridge Road</u>	Beacon Fen Energy Park	Vehicular Traffic Flows	Temporary / Direct	High	Local	Significant	Provision of a Construction Traffic Management Plan	Not Significant
		Accidents and Safety		High Negligible		Not Significant		
		Severance		High High		Significant		
		Drive Delay		High High		Significant		
		Hazardous and Dangerous Loads		High Negligible		Not Significant		
		Dust and Dirt		High Negligible		Not Significant		

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
Link Five – Bicker Drove	Beacon Fen Energy Park	Vehicular Traffic Flows	Temporary / Direct	High High	Local	Significant	Provision of a Construction Traffic Management Plan	Not Significant
		Accidents and Safety		High Negligible		Not Significant		
		Severance		High High		Significant		
		Driver Delay		High High		Significant		
		Hazardous and Dangerous Loads		High Negligible		Not Significant		
		Dust and Dirt		High Negligible		Not Significant		

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
Link Six – Vicarage Drove	Beacon Fen Energy Park	Vehicular Traffic Flows	Temporary / Direct	High High	Local	Significant	Provision of a Construction Traffic Management Plan	Not Significant
		Accidents and Safety		High Negligible		Not Significant		
		Severance		High High		Significant		
		Driver Delay		High High		Significant		
		Hazardous and Dangerous Loads		High Negligible		Not Significant		
		Dust and Dirt		High Negligible		Not Significant		
Link Seven – A52 south of	Beacon Fen Energy Park	Vehicular Traffic Flows	Temporary / Direct	Negligible	Local	Not Significant		Not Significant



Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
National Grid haul road				Negligible			Provision of a Construction Traffic Management Plan	
		Accidents and Safety		Negligible Negligible		Not Significant		
		Severance		Negligible Negligible		Not Significant		
		Driver Delay		Negligible Negligible		Not Significant		
		Hazardous and Dangerous Loads		Negligible Negligible		Not Significant		
		Dust and Dirt		Negligible Negligible		Not Significant		
Operation								
Link One - A17 west of	Boston Alternative	Vehicular Traffic Flows	Temporary / Direct	High	Local	Not Significant	N/A	Not Significant

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
proposed temporary construction access Link Two – A17 west of proposed construction / operational access Link Three – A17 east of proposed construction / operational access	Energy Facility	Accidents and Safety		Negligible				
	Land North of Roman Bank and East of Middle Marsh Road at Red House Farm, Holbeach Bank	Severance						
		Driver Delay						
		Hazardous and Dangerous Loads						
		Dust and Dirt						
Beacon Fen Energy Park								
Link Three – A17 east of proposed construction / operational access	Beacon Fen Energy Park	Vehicular Traffic Flows	Temporary / Direct	High Negligible	Local	Not Significant	N/A	Not Significant
		Accidents and Safety						
		Severance						

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
<u>Link Four – Cowbridge Road</u> <u>Link Five – Bicker Drove</u> <u>Link Six – Vicarage Drove</u> <u>Link Seven – A52 south of National Grid haul road</u>		Driver Delay						
		Hazardous and Dangerous Loads						
		Dust and Dirt						
Decommissioning								
Link One – A17 west of proposed temporary construction access Link Two – A17 west of proposed construction	Boston Alternative Energy Facility Land North of Roman Bank and East of Middle Marsh Road at Red	Vehicular Traffic Flows Accidents and Safety Severance Driver Delay	Temporary / Direct	High Negligible	Local	Not Significant	Provision of a Decommissioning Traffic Management Plan	Not Significant



Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
/ operational access Link Three - A17 east of proposed construction / operational access	House Farm, Holbeach Bank	Hazardous and Dangerous Loads						
	Beacon Fen Energy Park	Dust and Dirt						
Link Three – A17 east of proposed construction / operational access Link Four – Cowbridge Road Link Five – Bicker Drove Link Six – Vicarage Drove Link Seven – A52 south of National Grid haul road	Beacon Fen Energy Park	Vehicular Traffic Flows	Temporary / Direct	High Low	Local	Not Significant	Provision of a Decommissioning Traffic Management Plan	Not Significant
		Accidents and Safety						
		Severance						
		Driver Delay						
		Hazardous and Dangerous Loads						
		Dust and Dirt						

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
Chapter 15– Air Quality								
Existing sensitive receptors located on construction routes	<p>Boston Alternative Energy Facility (Ref: EN010095)</p> <p>Land North of Roman Bank and East of Middle Marsh Road at Red House Farm, Holbeach Bank (Ref: H09-0132-23)</p> <p>Beacon Fen Energy Park (Ref: EN010152).</p>	Potential increase in concentrations of NO ₂ , PM ₁₀ and PM _{2.5} as a result of additional construction traffic movements	Temporary/ Direct	Not Applicable	Local	Not Significant	Mitigation measures secured in the Outline CTMP	Not Significant
Chapter 16– Land Use and Agriculture								

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
Loss of Agricultural Land from Cumulative Solar Farms	Entire Shortlist	Loss of BMV land	Temporary, Adverse, Direct for sites 1,2,4-15 & 17 Permanent, Adverse, Direct for sites 3 & 16	(1)- High (2) – Minor to Moderate	UK	Sites 1, 2, 4- 15 & 17 Moderate to Minor adverse- Not Significant Sites 3 & 16 Major adverse Significant	Protection and Restoration of affected BMV land (solar farms) through Soil Management Plans for construction and decommissioning No mitigation for Sites 3 & 16 as loss of BMV land is permanent. Site 16 is major adverse significance in its own right. Cumulative Assessment has not triggered a significant impact	Sites 1, 2, 4- 15 & 17 Minor Adverse (UK) Not Significant Site 3 & 16 Major Adverse (UK) – Significant
Chapter 17- Glint and Glare								
Local ground receptors including residential, rail and road receptors.	Beacon Fen Energy Park (Ref: EN010152).	Potential for increased glint during operational phase as a result of glint from multiple sources.	N/A	N/A	Local	Negligible Not Significant	Minimised through screening at both sites. Screening at Heckington Fen results in no glint at receptors, therefore there cannot be	Negligible Not Significant



Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
							cumulative glint with Beacon Fen	
Aviation receptors	Entire list	Reflection of sunlight from panels in multiple arrays. Potential safety issues from pilot dazzle or air traffic control tower dazzle	N/A	N/A	National	Negligible Not Significant	No mitigation employed	Negligible Not Significant
Chapter 18 – Miscellaneous (Major Accidents and Disasters)								
Local receptors including work force, local residential, rail and road receptors.	Entire Shortlist	Increase risk of major accidents and disasters from construction, operational and decommissioning activities	Short Term – Long Term Direct	N/A	Local	Not Significant	Minimising risk through appropriate risk assessments secured through the oCEMP, oOEMP, oDRP and oESSMP.	Not Significant
Chapter 18 – Miscellaneous (Waste)								

Receptor/ Receiving Environment	Relative Cumulative Projects	Description of Potential for Cumulative Effects	Nature of Effect	Sensitivity (1) and Magnitude (2) of Effect	Geographical Importance	Significance of Cumulative Effect	Mitigation/ Enhancement Measures	Residual Cumulative Effects
Local recycling plants or landfill sites	Entire Shortlist	Increased pressure on the local recycling plants or landfill sites	Medium Term Direct	N/A	Local	Not Significant	Management of the potential cumulative volumes of waste would be secured through the oCEMP, oOEMP and oDRP, and a Site Waste Management Plan will be agreed prior to construction commencement.	Not Significant
Chapter 18 – Miscellaneous (Electric, Magnetic and Electromagnetic Fields)								
Sensitive receptors of EMF's	Entire Shortlist	Harmful to health	Permanent Direct	N/A	Local	Not Significant	N/A	Not Significant
Chapter 18 – Miscellaneous (Telecommunications, Television Reception and Utilities)								
Local receptors	Entire Shortlist	Disruption to television reception and on-site utilities	Long Term Direct	N/A	Local	Not Significant	N/A	Not Significant



Appendix 1 – Cumulative Sites Long List and Shortlist (Revision 5)

APPENDIX 2.3- CUMULATIVE SITES LONG LIST AND SHORTLIST

Document Properties		
Regulation Reference	Regulation 5(2)(a)	
Planning Inspectorate Scheme Reference	EN010123	
Application Document Reference	6.3.2.3	
Title	Appendix 2.3 - Cumulative Sites Long List and Shortlist	
Prepared By	Heckington Fen Energy Park Project Team (Pegasus)	
Version History		
Version	Date	Version Status
Rev 1	February 2023	Application Version
Rev 2	November 2023	Deadline 2
Rev 3	December 2023	Deadline 3
Rev 4	January 2024	Deadline 4
Rev 5	February 2024	Deadline 5

1.1 INTRODUCTION

1.1 Planning Inspectorate Advice Note Seventeen (Planning Inspectorate, 2019) provides a clear and systematic approach to cumulative effects which forms the basis of the cumulative effects assessment for the Proposed Development. The approach consists of a four-stage process which is further described in **Table 1.1** below.

Table 1.1: Summary of the four-stage process for cumulative effect assessment

Cumulative Effect Assessment Stage	Description of Stage
Stage 1	Establish the National Significant Infrastructure Project’s Zone of Influence and identify long list of ‘other developments’.
Stage 2	Identify shortlist of ‘other developments’ for Cumulative Effects Assessment.
Stage 3	Information gathering of the ‘other developments’.
Stage 4	An assessment of the likely cumulative effects. Mitigation measures are identified (where appropriate) where an adverse cumulative effect is identified. The apportionment of effect between the Proposed Development and the ‘other developments’ is considered, e.g., whether the contribution to the effect is demonstrably related to one development or whether

1.2 An exercise has been undertaken to identify a long list, whereby, the cumulative schemes have been assessed against the four assessment stages and subsequently progressed as part of the shortlist of cumulative schemes that are considered as part of the cumulative assessment, which is presented in **Chapters 6 to 18** (document reference 6.1.6-6.1.18) of this Environmental Statement. The process used to identify this shortlist is described in Section 2.13 of **Chapter 2- EIA Methodology and Consultation** (document reference 6.1.2) of this Environmental Statement.

1.3 **Table 1.2** below presents the long list of cumulative schemes identified as relevant to the Proposed Development. Each of these have been reviewed as part of Stages 1 and 2 of the four-stage approach listed in Section 2.13 of **Chapter 2- EIA Methodology and Consultation** (document reference 6.1.2) of this Environmental Statement.

1.4 Those cumulative schemes identified to be progressed to the shortlist and reviewed against cumulative effect assessment Stages 3 and 4 are then progressed as part of the Cumulative Assessment presented in **Chapters 6 to 18** (document reference 6.1.6-6.1.18) of this Environmental Statement. For ease of reference, the shortlist of all potential cumulative developments is presented in **Table 1.3**. This information was collated prior to finalisation of the ES chapters, as required, and was up to date as of end of December 2022.

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- 1.5 Subsequent to the submission of the DCO application in February 2023, the Applicant has continued to liaise with the relevant Local and County Planning Authorities and has updated the cumulative long list and in turn the cumulative shortlist (as necessary). These revised lists are up to date as of February 2024, to allow for the collation of data and assessments prior to the finalisation of the technical disciplines update of the cumulative effects assessment. This update has been presented as an addendum to the ES in **ES Technical Note- Updated Information on Cumulative Projects** (document reference ExA.ESTN-Cumulative-D5.V1).
- 1.6 Revision 1 of the **ES Technical Note- Updated Information on Cumulative Projects** was submitted to the Planning Inspectorate at Deadline 2 as agreed with the Examining Authority after Issue Specific Hearing 2 on the 20th September 2023. At Deadline 3, this document was updated to a Revision 3 after North Kesteven District Council (NKDC) provided two additional cumulative projects to be considered by the Applicant subsequent to the request at Issue Specific Hearing 4 on the 22nd November 2023 from the Applicant to be provided with any new, relevant projects in the ongoing cumulative assessment updates. At Deadline 4, this document was updated to a Revision 4 with project statuses updated (where required). The most notable change was an existing cumulative project on the Shortlist (Land to the East and West of Mareham Lane, Sleaford) was updated to a Tier 1 project. No new cumulative projects were added to the Long List or Shortlist. It was confirmed and agreed with the Relevant Planning Authorities after Issue Specific Hearing 4 on Wednesday 22nd November 2023 that at Deadline 4 there would be a 'freeze' for new cumulative sites to be considered by the Applicant. This was set out in **Written Summary of Applicant Oral Case at Issue Specific Hearing 4 (ISH4) on Wednesday 22nd November 2023** (document reference ExA.WSISH4-D3.V1 / REP3-039). At Deadline 5, this document was updated to a Revision 5 with project statuses updated and alignment into correct 'Tier' categories (where required).
- 1.7 Where information has been unavailable on the relevant planning portals, this has been specified within **Table 1.2**.

Table 1.2- Cumulative Sites Long List

No.	Project Planning Reference /	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
	PINS											
1	EN010133	Cottam Solar Project - three electricity generating stations, each with anticipated capacity in excess of 50MW	43.4km north-west	Application submitted and not yet determined. Examination commenced 5 th September 2023, expected to close March 2024	1	No	Yes	Potential for overlap - predicted start of construction 2024-2026	Potential for overlap - predicted start of operation 2026	Potential for overlap	Due to the size and nature of this scheme it is proposed to include as part of the cumulative scenario due to the potential for cumulative impacts relating to loss/change of use of agricultural land at a regional level.	Yes
2	EN010131	Gate Burton Energy Park - generation, storage and export of up to 500 (MW) electrical generation capacity	48.5km north-west	Application submitted and not yet determined. Examination closed on 4 th January 2024	1	No	Yes	Potential for overlap- predicted start of construction 2025-2028	Potential for overlap- predicted start of operation 2028	Potential for overlap	Due to the size and nature of this scheme it is proposed to include as part of the cumulative scenario due to the potential for cumulative impacts	Yes

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No.	Project Planning Reference	Shortened Name and Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
											relating to loss/change of use of agricultural land at a regional level.	
3	EN010132	West Burton Solar Project - four electricity generating stations, each with anticipated capacity in excess of 50MW	41.1km north-west	Application submitted and not yet determined. Examination Commenced November 2023, expected to close May 2024	1	No	Yes	Potential for overlap-predicted start of construction 2024-2026	Potential for overlap-predicted start of operation 2026	Potential for overlap	Due to the size and nature of this scheme it is proposed to include as part of the cumulative scenario due to the potential for cumulative impacts relating to loss/change of use of agricultural land at a regional level.	Yes
4	EN010127	Mallard Pass Solar Farm - generation capacity of greater than 50 MW.	33.2km south-west	Application Submitted and not yet determined. Examination closed November 2023 This is over 2No. County Council's with approximate	1	No	Yes	Potential for overlap-predicted start of construction 2026-2028	Potential for overlap-predicted start of operation 2028	Potential for overlap	Due to the size and nature of this scheme it is proposed to include as part of the cumulative scenario due to the potential for cumulative impacts	Yes

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No.	Project Planning Reference	Shortened and Description	Name Brief	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
									Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
					ly 12% of the Site within Lincolnshire							relating to loss/change of use of agricultural land at a regional level.	
5	EN010095	Boston Alternative Energy Facility (BAEF) - 102MWe gross (80MWe exportable) energy from waste facility with light weight aggregates wharf, waste reception and storage		11.7km west	Application determined and granted development consent on the 5 th July 2023	1	No	Yes	2022	2026	N/A	Due to the size and nature of this scheme it is proposed to include as part of the cumulative scenario due to the potential for cumulative impacts relating to loss/change of use of agricultural land at a regional level.	Yes
6	EN010126	Temple Oaks Renewable Energy Park - 250MW Solar Farm, accompanied by 400MWh Battery Energy Storage System		18.1km south-west The Offsite Cable Route Corridor connects into Bicker Fen Substation and are in close proximity (less than 1km)	Scoping Report submitted and Response Published August 2022	2	No	Yes	Potential for overlap	Potential for overlap	Potential for overlap	Due to the size and nature of this scheme it is proposed to include as part of the cumulative scenario due to the potential for cumulative impacts	Yes

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No.	Project Planning Reference	Shortened Name and Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
											relating to loss/change of use of agricultural land at a regional level.	
7	EN010130	Outer Dowsing Offshore Wind (Generating Station)- offshore wind farm and associated offshore and onshore infrastructure including offshore and onshore high voltage electricity cables, onshore and offshore electricity substation(s), connection(s) to the National Grid and ancillary and temporary works.	54km north-east to the site boundary off the coast of Lincolnshire. Proposed Cable Route Corridor to Weston Marsh ¹ (north of Spalding) is 10.58km east of the Order Limits for the Offsite Cable Route Corridor for Heckington Fen.	Scoping Report submitted and Response Published Sept 2022. PEIR and Formal Public Consultation commenced in June 2023. Formal consultation has refined grid connection search area.	2	Offshore wind farm outside ZOI. Indicative grid connection search area following refined area is outside ZOI for all disciplines.	Yes	Potential for overlap-predicted start of construction 2026-2030	Potential for overlap-predicted start of operation 2030	Potential for overlap	The offshore wind farm is outside of the cumulative ZOI for all disciplines and the likelihood of cumulative impacts is considered low. The indicative onshore cable route is now also outside the cumulative ZOI. As now both elements are outside of the cumulative ZOI for all disciplines it is proposed to exclude as part of the cumulative scenario.	No

¹ Information taken from 6.1.3 Project Description chapter of PEIR of the Outer Dowsing Applicant project website. An update was provided under 'News' section of the project website on the 10/08/23 that only the Weston Marsh options (Weston Marsh South and Weston Marsh North) would be pursued, and the Lincolnshire Node option within the PEIR would no longer be pursued.

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No.	Project Planning Reference	Shortened Name and Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
8	EN010142	Tillbridge Solar Project- generation capacity of greater than 50 MW.	47.7km north-west	Scoping Report submitted and Response Published in November 2022. Statutory Consultation from 30 May to 11 July 2023. Targeted Statutory Consultation being undertaken between 14 December 2023 and 25 January 2024.	2	No	Yes	Potential for overlap-predicted start of construction 2025-2027	Potential for overlap-predicted start of operation 2027	Potential for overlap	Due to the size and nature of this scheme it is proposed to include as part of the cumulative scenario due to the potential for cumulative impacts relating to loss/change of use of agricultural land at a regional level.	Yes
9	EN010152	Beacon Fen Energy Park ² Solar Generation and Battery Storage Project with generating capacity of approximately 600MW and similar capacity for energy storage	3.3km north-west of the Energy Park Site The Offsite Cable Route Corridor of this project and Heckington Fen intersect.	Scoping Report Submitted and Response Published in June 2023. Statutory Consultation commenced on 22	2	Yes	Yes	Potential for overlap	Potential for overlap	Potential for overlap	Due to the size and nature of this scheme it is proposed to include as part of the cumulative scenario due to the potential for	Yes

² At the time of writing this report, Beacon Fen Energy Park has not submitted a DCO application. The only available documentation on the National Infrastructure Planning website for Beacon Fen Energy Park is the Scoping Report. A Beacon Fen Energy Park project website has been set up by Low Carbon with non-statutory and statutory consultation material available (May 2023- Jan 2024) providing the most up to date design evolution information. The Formal Consultation documents includes a PEIR which has been reviewed in Revision 4 of the ES Technical Note- Updated Information on Cumulative Projects

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No.	Project Planning Reference /	Shortened Name and Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
			The area of the possible crossing is on land south of Forty Foot Drain	January 2024.							cumulative impacts for Landscape & Visual, Transport & Access and a loss/change of use of agricultural land at a regional level.	
10	EN010149	Springwell Solar Farm generation capacity and storage capacity of greater than 50 MW.	15.5km north west at its closest point to the main site of the Springwell Solar Farm	Scoping Report Submitted and Response Published in May 2023. Statutory Consultation commenced on 11 January 2024.	2	No	Yes	Potential for overlap	Potential for overlap	Potential for overlap	Due to the size and nature of this scheme it is proposed to include as part of the cumulative scenario due to the potential for cumulative impacts relating to loss/change of use of agricultural land at a regional level.	Yes
11	EN010154	Fosse Green Energy – 320-350MW Solar Farm, accompanied by 480MWh Battery Energy Storage System	28.3km northwest at its closest point to the main site of the Fosse Green Energy project	Scoping Report Submitted and Response Published in July 2023	2	No	Yes	Potential for overlap	Potential for overlap	Potential for overlap	Due to the size and nature of this scheme it is proposed to include as part of the cumulative	Yes

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2. EIA Methodology and Consultation

No.	Project Planning Reference	Shortened Name and Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
											scenario due to the potential for cumulative impacts relating to loss/change of use of agricultural land at a regional level.	
12	EN010159	One Earth Solar Farm ³ 740MW Solar Farm, accompanied by 480MWh Battery Energy Storage System	42.4km northwest at its closest point to the main site of One Earth Solar Farm This is over 2No. County Council's with approximately 17% of the Site within Lincolnshire	Pre-application (Scoping Report submitted 13 th November 2023 and Response Published December 2023)	2	No	Yes	Potential for overlap	Potential for overlap	Potential for overlap	Due to the size and nature of this scheme it is proposed to include as part of the cumulative scenario due to the potential for cumulative impacts relating to loss/change of use of agricultural land at a regional level.	Yes
13	WA010003	Lincolnshire Reservoir	6.9km west at its closest point to the main	Pre-application (to date no Scoping	3	No	Yes	No construction is currently proposed to	Potential for overlap	Not applicable as reservoir would not be decommissioned	Due to the size and nature of the scheme it is	Yes

³ Only S51 advice and the Scoping Request are currently available via National Infrastructure Planning website. Details presented within this longlist have been obtained via One Earth Solar Farm website which states that they completed their 1st phase of consultation, on the 8th November 2023. www.oneearthsolarfarm.co.uk

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2. EIA Methodology and Consultation

No.	Project Planning Reference /	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
			Reservoir site	Report has been submitted). Expected submission of application to be September 2025				commence 2029			proposed to include it as part of the cumulative scenario as there are potential for operational cumulative impacts.	
14	EN010162	Great North Road Solar Park	43km west at its closest point	Pre-application Scoping Report submitted November 2023	3	No	No	Potential for overlap – no construction timeline confirmed	Potential for overlap – no operation timeline confirmed	Potential for overlap – no decommissioning timeline confirmed	The project is outside of the zone of influence as it is an NSIP scheme not within Lincolnshire. Therefore due to distance it is unlikely to have significant impact in relation the Proposed Development.	No
Boston Borough Council												
15	B/22/0198	Construction and installation of a 132kV underground electrical cable to connect Bicker Solar Farm to Bicker Fen Substation	Within in site boundary	Planning permission granted 23/09/22	1	Yes – all disciplines	Yes	Timeline unclear – potential for overlap.	N/A	N/A	Due to the scale and nature of the scheme cumulative impacts with the Proposed Development are considered	No

ENVIRONMENTAL STATEMENT

2. EIA Methodology and Consultation

No.	Project Planning Reference	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
											unlikely.	
16	B/22/0356	Land West of Cowbridge Road, Bicker Fen, Boston-Proposed development of a photovoltaic solar array, grid connection, access improvement works & ancillary development on land at Bicker Fen, Boston and South Holland	5.3km south of main site. Adjacent to south-east corner of the site boundary cable route.	Planning permission granted 21/07/23	1	Yes- all disciplines	Yes	Construction timeline unclear as application only recently determined – potential for overlap.	Timeline unclear – expected to overlap.	Timeline unclear – potential for overlap.	Due to the nature of the scheme and the distance from the Proposed Development it is included within the cumulative scenario.	Yes
17	B/21/0443	Vicarage Drove Solar Farm - Proposed construction and operation of a solar photovoltaic farm, battery storage and associated infrastructure,	Adjacent to south-west corner of the site boundary (cable route)	Planning permission granted 17/02/2022	1	Yes – all disciplines	Yes	Construction Timeline unclear – As TCPA construction needs to start within 3 years of granting planning consent (by Feb 2025) - potential for overlap.	Timeline unclear – expected to overlap.	Timeline unclear – potential for overlap.	Due to the nature of the scheme and the distance from the Proposed Development it is included within the cumulative scenario.	Yes
18	B/20/0161	Land off St Swithins Close - Approval of reserved matters (appearance, access, landscaping, layout & scale) following outline approval B/16/0463 for residential development of up	2km southeast	Approved with conditions 17/02/2021	1	Yes – all disciplines bar noise and RVAA	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the	No

ENVIRONMENTAL STATEMENT

2. EIA Methodology and Consultation

No.	Project Planning Reference	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
		to 40 dwellings									Proposed Development.	
198	B/21/0277	Swan Lake Lodges, Boston Road - Erection of 57no. holiday lodges and retention of 1no. existing holiday lodge (58no. total), erection of storage building and creation of internal access roads and excavation of a pond	3.25km east	Approved with conditions 01/04/2022	1	Yes - air quality, hydrology, heritage, glint and gale, transport, ecology (international sites)	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
20	B/20/0115	Approval of reserved matters (appearance, landscaping, layout and scale) following outline approval B/17/0244 (Residential development of up to 41 market and affordable dwellings)	2km east	Approved with conditions 03/07/2020	1	Yes - all disciplines bar noise and RVAA	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
21	B/21/0413	Land at Middlegate Road West - Re-plan and re-design of the housing layout within phases 2 & 3 (154 dwellings) on parts of the site previously approved under B/18/0039 (for the erection of up to 195 dwellings); including	9.5km south-east	Not yet determined	3	Yes - International designated sites (ecology)	Yes	Construction timeline unclear as application pending - potential for overlap.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed	No

ENVIRONMENTAL STATEMENT

2. EIA Methodology and Consultation

No.	Project Planning Reference	Shortened Name and Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
		provision of 13 additional units (to create a combined total of 208 dwellings) and revisions to proposed house types									Development.	
22	B/19/0383	Land at Station Road/Spalding Road - Residential development of 256 dwellings	8.5km south-east	Approved with conditions 10/09/2021	1	Yes - International designated sites (ecology)	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
23	B/20/0293	Land at 31-33, London Road - Residential development consisting of 41 dwellings,	9.1km south-east	Approved with conditions 18/12/2020	1	Yes - International designated sites (ecology)	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
24	B/19/0317	Land off Station Road -Erection of 31 dwellings	9.7km south-east	Approved with conditions 20/01/2020	1	Yes - International designated sites	Yes	Anticipated scheme will be built before construction of the	N/A	N/A	Development is not of a nature or scale which is considered to have	No

ENVIRONMENTAL STATEMENT

2. EIA Methodology and Consultation

No.	Project Planning Reference	Shortened Name and Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
						(ecology)		Proposed Development.			significant effects in combination with the Proposed Development.	
South Holland District Council												
25	H08-1335-21	Land off Spalding Road – Residential development of 28 dwellings.	8.2km south-east	Approved with conditions 18/11/22	1	Yes – International designated sites (ecology)	Yes	Construction timeline unclear as application pending – potential for overlap.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
26	H08-1256-21	Land off York Gardens Gosberton Proposed residential development of 96 and pedestrian link	7.3km south-east	Pending approval	3	Yes – International designated sites (ecology)	Yes	Construction timeline unclear as application pending – potential for overlap.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
27	H08-0744-21	Land off High Street Gosberton – Residential development of 46 units.	8km south-east	Approved 31/01/2022	1	Yes – International designated sites (ecology)	Yes	Anticipated scheme will be built before construction of the	N/A	N/A	Development is not of a nature or scale which is considered to have	No

ENVIRONMENTAL STATEMENT

2. EIA Methodology and Consultation

No.	Project Planning Reference	Shortened Name and Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
								Proposed Development.			significant effects in combination with the Proposed Development.	
28	H04-1029-20	Land west of Malting Lane, Donington – erection of 32 dwellings.	3km south	Approved 02/11/2021	1	Yes – air quality, hydrology, heritage, glint and gale, transport, ecology (international sites)	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
29	H04-0268-20	Land west of Malting Lane, Donington – residential development of 40 dwellings	3km south	Approved 02/11/2021	1	Yes – air quality, hydrology, heritage, glint and gale, transport, ecology (international sites)	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
30	H04-0849-22	Land West of Cowbridge Road, Bicker Fen, Boston-Proposed development of a photovoltaic solar array, grid connection, access	5.3km south of main site. Adjacent to southeast corner of the site boundary	Approved 25/08/22	1	Yes- all disciplines	Yes	Construction timeline unclear as application in Boston Borough Council was only recently	Timeline unclear – expected to overlap.	Timeline unclear – potential for overlap.	Due to the nature of the scheme and the distance from the Proposed Development it is included	Yes

ENVIRONMENTAL STATEMENT

2. EIA Methodology and Consultation

No.	Project Planning Reference /	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
		improvement works & ancillary development on land at Bicker Fen, Boston and South Holland	cable route.					approved – potential for overlap.			within the cumulative scenario.	
31	H09-0132-23	Land North of Roman Bank and East of Middle Marsh Road at Red House Farm, Holbeach Bank, Spalding Proposed 48MW ground mounted solar development with associated infrastructure	19.7km southwest of Bicker Fen substation	Pending Approval – submitted February 2023	1	No	Yes	Timeline unclear – potential for overlap.	N/A	N/A	Due to the nature of this scheme it is proposed to include as part of the cumulative scenario due to the potential for cumulative impacts relating to loss/change of use of agricultural land at a regional level.	Yes
	North Kesteven District Council											
32	20/0741/FUL	Land East Of Welchman Way - Erection of 33 affordable houses along with associated infrastructure	3.9km east	Approved 27/10/2020	1	Yes – air quality, hydrology, heritage, glint and gale, transport, ecology (internatio	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the	No

ENVIRONMENTAL STATEMENT

2. EIA Methodology and Consultation

No.	Project Planning Reference	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
						nal sites)					Proposed Development.	
33	23/1021/FUL	Land at Little Hale Fen- Proposed solar farm (up to 49.995MW generating capacity)	4.6km north-east	Application submitted - and validated 15/09/23	1	Yes - air quality, hydrology, heritage, glint and gale, transport, ecology (international sites)	Yes	As not yet determined timeline unclear - potential for overlap.	As not yet determined timeline unclear - potential for overlap.	As not yet determined timeline unclear - potential for overlap.	. As not yet determined timeline for this is unclear, and this scheme is considered within the cumulative scenario.	Yes
34	14/1034/EIAS CR	Land At Ewerby Thorpe - Erection of solar array with generating capacity of up to 28 MW	4.1km north-west	Not EIA Development The Red Line boundary is within the DCO Order Limits for Beacon Fen Energy Park. It is therefore, determined that the TCPA application will not be brought forward and can be removed from the cumulative longlist	3	Yes - air quality, hydrology, heritage, glint and gale, transport, ecology (international sites)	Yes	Timeline unclear - potential for overlap.	Timeline unclear - potential for overlap.	Timeline unclear - potential for overlap.	Formal application for this scheme has yet to be made. Land area is within the Beacon Fen Energy Park boundary and so this TCPA site will not progress	No

ENVIRONMENTAL STATEMENT

2. EIA Methodology and Consultation

No	Project Planning Reference	Shortened Name and Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
35	19/0863/FUL	Land to the North of White Cross Lane - solar farm (32MW)	8.4km west	Approved 07/10/2019 - construction completed, confirmed via telephone call with planning agent. 23/0873/VA RCON - application submitted in July 23 to vary site design to built form.	1	Yes - International designated sites (ecology)	Yes	It is believed that construction was taking place in June 2023. Construction process is completed as has been confirmed via discussions in October 2023 with Planning Agent	N/A	N/A	Due to the site now being operational it is included within the baseline environment of assessments and will no longer be assessed as a cumulative site	No
36	19/0060/FUL	Land South Of Gorse Lane - Solar PV park (circa 20MW electricity generating capacity)	11km west	Approved 11/04/2019 - Unclear if construction has started - discharge conditions approved Construction commenced - site now Operational	1	No	Yes	This scheme has been constructed	N/A	N/A	Due to the site now being operational it is included within the baseline environment of assessments and will no longer be assessed as a cumulative site	No
37	23/1419/FUL	Land to the East and West of Mareham Lane, Sleaford Installation of a	10.5km east	Application submitted 28 th November 2023-	1	No	Yes	Timeline unclear - potential for overlap.	Timeline unclear - potential for	Timeline unclear - potential for overlap.	Due to the nature of the scheme and the distance from the	Yes

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2. EIA Methodology and Consultation

No.	Project Planning Reference /	Shortened Name and Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
		49MW ground mounted solar facility		awaiting determination Screening Request submitted 13 th September 2023 – determined no- EIA					overlap.		Proposed Development it is included within the cumulative scenario.	
38	21/0786/EIAS CR	Land West of Walcot off Braceby Road, Walcot, Sleaford Proposed Solar Farm (up to 50MW capacity) and associated Infrastructure	18.3km southwest	Screening Request submitted 18 th May 2021- determined no-EIA Discussion with Planning Agent for the site in October 2023 stated that this site was no longer being progressed to a planning application	3	No	Yes	Timeline unclear – potential for overlap	Timeline unclear – potential for overlap.	Timeline unclear – potential for overlap.	Due to the nature of the scheme and distance of the site, plus the confirmation from the Planning Agent that this Site is no longer progressing the site is not included within the cumulative scenario	No
39	22/1376/FUL	Produce World Ltd Moor Lane Swinderby Lincoln Lincolnshire LN6 9LX	35.5km north-west	EIA not required. Pending approval-	2	No	No	Timeline unclear – potential for overlap	Timeline unclear – potential for overlap	Timeline unclear – potential for overlap	Development is not within close proximity	No

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2. EIA Methodology and Consultation

No.	Project Planning Reference /	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
		Erection of 132 dwellings with associated outbuildings/garages and landscaping/open space and affordable housing and including conversion of existing (retained) building to shop and offices		application submitted October 2022							which is considered to have significant effects in combination with the Proposed Development.	
	East Lindsey District Council											
40	S/152/01297/22	Land west of Mallows Lane and north of Pymoor Lane, Main Road, Sibsey- Installation of a ground mounted solar photovoltaic (PV) farm with battery storage; along with continued agricultural use, ancillary infrastructure and security fencing, CCTV, landscaping, bunding, ecological enhancements and associated works. Construction of a vehicular access	15.3km north-east	Approved 19/12/22	1	No	No	Timeline unclear – potential for overlap.	Timeline unclear – potential for overlap.	Timeline unclear – potential for overlap.	Due to the nature of this scheme and it being outside of the cumulative ZOI for all discipline the likelihood of cumulative impacts is considered low and does not warrant further consideration.	No
	South Kesteven											

ENVIRONMENTAL STATEMENT

2. EIA Methodology and Consultation

No.	Project Planning Reference /	Shortened Name and Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
	District Council											
41	S22/1815	Land at Washdyke Farm Billingborough Road Folkingham Lincolnshire NG34 0EZ - Request for an EIA Screening Opinion for a 27MW Solar Farm	13.9km south-west	EIA not required	3	No	No	Timeline unclear - potential for overlap.	Timeline unclear - potential for overlap.	Timeline unclear - potential for overlap.	Formal application for this scheme has yet to be made. Due to the nature of this scheme and it being outside of the cumulative ZOI for all discipline the likelihood of cumulative impacts is considered low and does not warrant further consideration.	No
42	S23/1845	Land North Of Welby Grantham Lincolnshire - Request for an EIA Screening for a 46 MW solar farm with battery storage	20.5km south-west	EIA not required	3	No	No	Timeline unclear - potential for overlap.	Timeline unclear - potential for overlap.	Timeline unclear - potential for overlap.	Formal application for this scheme has yet to be made. Due to the nature of this scheme and it being outside of the cumulative ZOI for all discipline the likelihood of cumulative impacts is considered	No

ENVIRONMENTAL STATEMENT

2. EIA Methodology and Consultation

No.	Project Planning Reference	Shortened Name and Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
											low and does not warrant further consideration.	
43	S23/2199	Ash Tree Solar Farm, Land at High Dyke Road, Londonthorpe 49.9MW solar scheme and 25MW of battery storage	22.7km south-west	Application Submitted November 2023- Awaiting Decision.	1	No	No	Timeline unclear – potential for overlap.	Timeline unclear – potential for overlap.	Timeline unclear – potential for overlap.	Due to the nature of this scheme and it being outside of the cumulative ZOI for all discipline the likelihood of cumulative impacts is considered low and does not warrant further consideration.	No

Table 1.3- Cumulative Sites Shortlist

	Name of Scheme	LPA	NSIP	Reference Number	Size of Scheme	Distance from Application Site
Tier 1 Sites						
1	Vicarage Drove – Approved	BBC ⁴	No	B/21/0443	49.9MW	c. 4.5km south of the Energy Park Site at its closest point but adjacent to the the proposed extension to the substation at Bicker Fen
2	Land West of Cowbridge Road, Bicker Fen, Boston- - Approved	BBC SHC ⁵	No	B/22/0356 H04-0849-22	49.9MW	c. 5.3km south of the Energy Park Site at its closest point to main site, but adjacent to the site boundary cable route
3	Boston Alternative Energy Facility - Approved July 2023	PINS- BBC	Yes	EN010095	50MW + (NSIP)	c. 11.7km west of the Energy Park Site at its closest point
4	Mallard Pass Solar Farm- Application Submitted Examination Completed in November 2023	PINS - SKDC ⁶	Yes	EN010127	50MW + (NSIP)	c.33.2km south-west of the Energy Park Site at its closest point
5	Cottam Solar Project – Application Submitted Examination Commenced September 2023, expected to close 5 th March 2024	PINS- BDC ⁷ & WLDC	Yes	EN010133	50MW + (NSIP)	c. 43.4km north-west of the Energy Park Site at its closest point
6	Gate Burton Energy Park - Application Submitted Examination Completed January 2024	PINS – BDC ³ & WLDC ⁸	Yes	EN010131	50MW + (NSIP)	c.48.5km north-west of the Energy Park Site at its closest point
7	West Burton Solar Project - Application Submitted Examination Commenced	PINS – BDC ³ & WLDC	Yes	EN010132	50MW + (NSIP)	c.41.1km north-west of the Energy Park Site at its closest point

⁴ Boston Borough Council

⁵ South Holland District Council

⁶ South Kesteven District Council

⁷ Bassetlaw District Council and West Lindsey District Council

⁸ West Lindsey District Council

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	November 2023					
8	Land at Little Hale Fen - Proposed Solar Farm 49.995MW generating capacity	NKDC ⁹	No	23/1021/FUL	49.995MW	c. 4.6km north-east of the Energy Park Site at its closest point
9	Land North of Roman Bank and East of Middle Marsh Road at Red House Farm, Holbeach Bank	SHDC	No	H09-0132-23	48MW	c. 19.7km southwest of Bicker Fen substation
17¹⁰	Land to the East and West of Mareham Lane, Sleaford	NKDC	No	23/1419/FUL	49.9MW	c.10.5km east of the Heckington Fen Energy Park at its closest point
Tier 2 Sites						
10	Temple Oaks-Scoping Submitted and Response Published August 2022	PINS - SKDC, NKDC, BBC, SHC	Yes	EN010126	50MW + (NSIP)	c.18.1 km south-west of the Energy Park Site at its closest point
11	Tillbridge Solar Project - Scoping Submitted and Response Published November 2022	PINS-BDC & WLDC	Yes	EN010142	50MW + (NSIP)	c. 47.7km north-west of the Energy Park Site at its closest point
12	Beacon Fen Energy Park-Scoping Response Submitted. Formal consultation commenced 22 nd January 2024	PINS - NKDC & BBC	Yes	EN010152	50MW + (NSIP)	c. 3.3km north west of the Energy Park Site. The Offsite Cable Route Corridor of this project and Heckington Fen intersect. The area of the possible crossing is south of the South Forty Foot Drain.
13	Springwell Solar Farm - Scoping Submitted and Response Published May 2023 Formal consultation commenced 11 th January 2024	PINS-NKDC	Yes	EN010149	50MW + (NSIP)	c. 15.5km north west of the Heckington Fen Energy Park Site at its closest point
14	Fosse Green	PINS -	Yes	EN010154	50MW +	c. 28.3km north west

⁹ North Kesteven District Council

¹⁰ Land to the East and West of Mareham Lane, Sleaford; this project is now a Tier 1 and removed as a Tier 3 project. The numbering of this project remains as '17' to maintain consistency in the use of the number in the 'ES Technical Note-Cumulative Projects'.

ENVIRONMENTAL STATEMENT

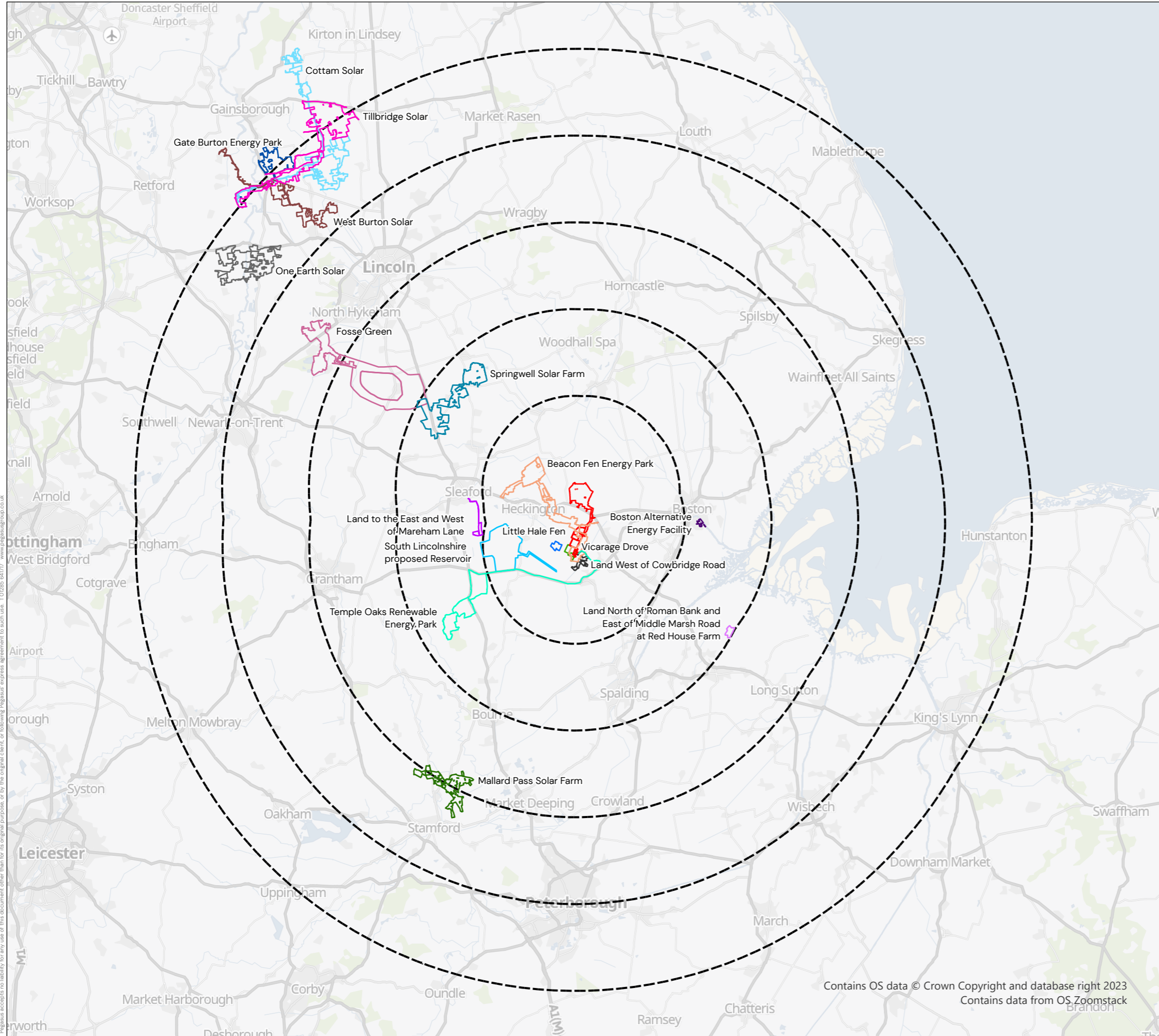
2. EIA Methodology and Consultation

	Energy Scoping Submitted and Response Published July 2023	- NKDC			(NSIP)	of the Heckington Fen Energy Park Site at its closest point
15	One Earth Solar Farm- Scoping Response Published December 2023	PINS- NSDC ¹¹ , BDC, WLDC	Yes	EN010159	50MW + (NSIP)	c. 42.4km northwest of the Heckington Fen Energy Park Site at its closest point.
Tier 3 Sites						
16	Lincolnshire Reservoir – pre application	PINS - NKDC	Yes	WA010003	50 million cubic metre (m ³) reservoir and water treatment works	c.6.9km west of the Offsite Grid Route at its closest point.

¹¹ Newark and Sherwood District Council



Appendix 2- Figure 2.2a- Cumulative Plan – Shortlisted (Regional Context) (Revision 4)



KEY

- Order Limits
- Radii Rings 10km-50km
- Vicarage Drove [B/21/0443]
- Land West of Cowbridge Road, Bicker Fen, Boston- Full Planning Application awaiting decision [H04-0849-22 - South Holland District Council] [B/22/0356 - Boston Borough Council]
- Boston Alternative Energy Facility (EN010095)
- Mallard Pass Solar Farm (EN010127)
- Cottam Solar Project (EN010133)
- Gate Burton Energy Park (EN010131)
- West Burton Solar Project (EN010132)
- Land at Little Hale Fen - Screening 21/1337/EIASCR
- Land North of Roman Bank and East of Middle Marsh Road at Red House Farm, Holbeach Bank
- Temple Oaks Renewable Energy Park (EN010126)
- Tillbridge Solar Project (EN010142)
- Springwell Solar Farm (EN010149)
- Beacon Fen Energy Park (EN010152)
- Fosse Green (EN010154)
- One Earth Solar (EN010159)
- Lincolnshire Reservoir (WA010003)
- Land to the East and West of Mareham Lane, Sleaford- 23/1419/FUL

DCO Document Reference: 6.2.2
 APFP Regulation: 5(2)(a)
 REV 5

FIGURE 2.2a CUMULATIVE SITES- SHORTLISTED (REGIONAL CONTEXT)

DATE	SCALE	SHEET	REVISION
31/01/2024	1:450,000@A3	-	I

DRAWING NUMBER
 P20-2370_131



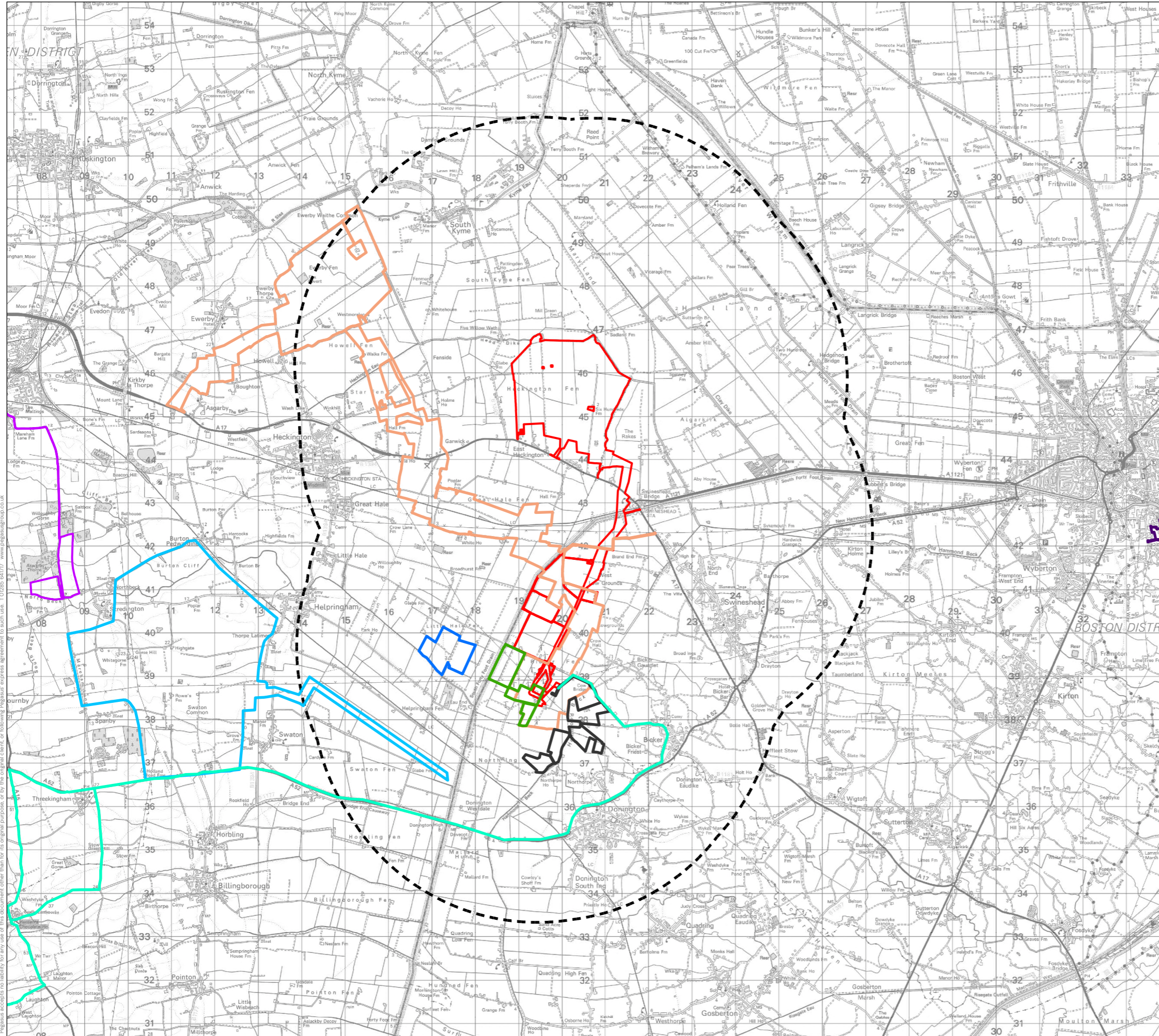
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Appendix 2- Figure 2.2b- Cumulative Plan - Shortlisted (Local Context) (Revision 4)



- KEY**
- Order Limits
 - 5km Buffer
 - Temple Oaks Renewable Energy Park (EN010126)
 - Boston Alternative Energy Facility (EN010095)
 - Land at Little Hale Fen – Screening 21/1337/EIASC
 - Vicarage Drove [B/21/O443]
 - Land West of Cowbridge Road, Bicker Fen, Boston– Full Planning Application awaiting decision [H04-0849-22 – South Holland District Council] [B/22/O356 – Boston Borough Council]
 - Lincolnshire Reservoir (WA010003)
 - Land to the East and West of Mareham Lane, Sleaford– 23/1419/FUL
 - Beacon Fen Energy Park (EN010152)

DCO Document Reference: 6.2.2
 APFP Regulation: 5(2)(a)
 REV 5

FIGURE 2.2b CUMULATIVE SITES - SHORTLISTED (LOCAL CONTEXT)

DATE	SCALE	SHEET	REVISION
31/01/2024	1:90,000@A3	-	J

DRAWING NUMBER P20-2370_21J

0

3.5 km

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Appendix 3 – Cumulative Traffic Assessment (Revision 3)

Reference	Site	Construction Route	Construction Timescale	Construction Traffic AADT (LGV)	Construction Traffic AADT (HGV)	ES Links Subject to Cumulative Traffic
Heckington Fen				Energy Park/Cable Route – 65 Substation - 5	Energy Park/Cable Route – 39 Substation - 10	Energy Park/Cable Route – 1, 2 and 3 Substation – 4, 5, 6 and 7
B/21/0443	Vicarage Drove	Construction period not forecast to overlap. Application suggests June 2023 – November 2023. Construction period must start before Feb 2025 to comply with planning permission, therefore assuming six month construction period works would be complete by 2026.				
H04-0849-22/ B/22/0356	Land West of Cowbridge Road, Bicker Fen, Boston	Construction period not forecast to overlap. Application suggests 2023-2024.				
EN010095	Boston Alternative Energy Facility	Vehicles could travel via either A16 north or via A16 south to A17/A1. Proportion of vehicles anticipated to use A17.	Construction traffic estimates suggest construction will be between March 2021- December 2025. However, the DCO was not granted until mid-2023 and the Developer’s agent has confirmed that works will not start until January 2024 (i.e. as a minimum	94 ¹	87 ² (maximum)	1, 2 and 3

¹ Royal Haskoning DHV Environmental Statement paragraph 19.7.24. Assumed 25% of total staff vehicle trips will use A52 Liqueurpond Street and will continue to A17.

² Royal Haskoning DHV Environmental Statement Appendix 19.3 ‘Traffic Assignment on Indicative Construction Programme’. External source (within Lincolnshire) trips for 2023 week 23. External source (outside of Lincolnshire) trips are assumed to route via the A52 to the A1.

			construction will be pushed back by circa 2 years and 10 months). Therefore, for the cumulative assessment it has been assumed that the same volumes of traffic will be required on the road network but with construction commencing in 2024.			
EN010127	Mallard Pass Solar Farm	Construction traffic via A1. Not required to travel along A17 study area.				
EN010133	Cottam Solar Project	Located north of site. Assuming construction materials will be imported at Goole/Immingham traffic will not be required to travel along the A17 study area.				
EN010131	Gate Burton Energy Park	Located north of site. Assuming construction materials will be imported at Goole/Immingham traffic will not be required to travel along the A17 study area.				
EN010132	West Burton Solar Project	Located north of site. Assuming construction materials will be imported at Goole/Immingham traffic will not be required to travel along the A17 study area.				
23/1021/FUL	Land at Little Hale Fen	Construction period not forecast to overlap. Application (DAS paragraph 1.4.5) suggests site will be operational by 2025.				
H09-0132-23	Land North of Roman Bank and East of Middle Marsh Road at Red House Farm, Holbeach Bank	Vehicles will access/egress via A17 south of Heckington Fen (near Holbeach). Proportion of vehicles anticipated to use A17 within vicinity of Heckington Fen site.	Not confirmed and not yet determined. Assuming three years from permission to construct, could overlap (6-7 month construction period).	60 ³ (maximum)	10 ⁴ (maximum)	1, 2 and 3

³ Newell Edwards Transport Statement dated 08/09/2022 paragraph 5.3.4.

⁴ Newell Edwards Transport Statement dated 08/09/2022 paragraph 5.3.5.

EN010126	Temple Oaks Renewable Energy Park	Site located to west of A15 so unlikely to use A17 for construction traffic.				
EN10142	Tillbridge Solar Project	Located north of site. Assuming construction materials will be imported at Goole/Immingham traffic will not be required to travel along the A17 study area.				
EN010152	Beacon Fen Energy Park	<p>Routes to include:</p> <ul style="list-style-type: none"> the A17 between the grade separated interchange at Kirby la Thorpe and the roundabout at Drayton, interchanging with the A52; a small section of Asgarby Road (between the villages of Asgarby and Ewerby) which forms part of the assumed access to the solar Site; the cable laying corridor (with access to it yet to be determined); and the existing haul route to the National Grid Bicker Fen substation⁵. <p>Assuming construction materials will be imported at Goole/Immingham Energy Park</p>	Construction anticipated to commence in 2026/2027 for (24-36 months) (Scoping Note para 2.7.2). Overlap anticipated.	Energy Park/Cable Route - 24 Substation – 5 ⁷	Energy Park/Cable Route - 49 Substation - 10 ⁸	Energy Park - 1, 2 and 3 Substation - 4, 5, 6 and 7

⁵ Beacon Fen Energy Park PEIR Chapter 9 – Access and Traffic – January 2024 paragraph 9.4.2.

⁷ Beacon Fen Energy Park PEIR Chapter 9 – Access and Traffic – January 2024 paragraph 9.6.9.

⁸ Beacon Fen Energy Park PEIR Chapter 9 – Access and Traffic – January 2024 paragraph 9.6.9.

		<p>traffic will not be required to travel along the A17 study area. However, it appears that construction traffic accessing the Bicker Fen Substation will use the National Grid A52 Haul Road, Cowbridge Road, Bicker Drove and Vicarage Drove⁶.</p> <p>Only National Grid A52 Haul Road, Cowbridge Road, Bicker Drove and Vicarage Drove anticipated to be subject to cumulative traffic movements, and only in a scenario whereby the Triton Knoll Access Track route is not used (i.e. in an emergency or in a circumstance outside the control of Ecotricity (Heck Fen Solar) or National Grid.</p>				
EN010149	Springwell Solar Farm	Located north of site. Assuming construction materials will be imported at Goole/Immingham traffic will not be required to travel along the A17 study area. Chapter 12 of the PEIR assesses the A15, the B1191, the B1188, the B1202, Navenby Lane, Bloxholm Lane, Temple Road and Gorse Hill Road ⁹ .				
EN010154	Fosse Green	Located north of site. Assuming construction materials will be imported at Goole/Immingham traffic will not be required to travel along the A17 study area.				
EN010159	One Earth Solar	Located north of site. Assuming construction materials will be imported at Goole/Immingham traffic will not be required to travel along the A17 study area.				
WA010003	Lincolnshire Reservoir	Construction period not forecast to overlap. Anticipated to commence in 2029.				

⁶ Beacon Fen Energy Park PEIR Chapter 9 – Access and Traffic – January 2024 Figure 9.1.

⁹ Springwell Solar Farm PEIR Chapter 12 – Traffic and Transport – undated Table 12.3.

23/1419/FUL	Land to the East and West of Mareham Lane, Sleaford	Located to west of site. Construction Traffic Management Plan for the development dated 1 st December 2023 (NKDC reference: 23/1419/FUL) details routing of all construction and operational vehicle traffic will enter the site from Mareham Lane via the A52. Therefore, assuming construction materials will be imported at Goole/Immingham, traffic will not be required to travel along the A17 study area.
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Total (including Heckington Fen) *Sites where a proportion of traffic is likely to use A17 have been assumed at 100% of traffic using this route. * Where applicable, maximum traffic has been assumed but it is unlikely that maximum periods will overlap.	Links 1-3 - 243 Links 4-7 - 10	Links 1-3 – 185 Links 4-7 - 20
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Key

Cumulative impact assessed
No cumulative impact based on construction period
No cumulative impact based on location

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