Gate Burton Energy Park Environmental Statement

Volume 1, Chapter 12: Socio-Economics and Land Use
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12. Socio-Economics and Land Use

12.1 Introduction

12.1.1 This chapter of the Environmental Statement (ES) presents the findings of an assessment of the likely significant socio-economic and land use effects as a result of the Scheme. For more details about the Scheme, refer to **ES Volume 1, Chapter 2: The Scheme** of this ES **[EN010131/APP/3.1]**.

12.1.2 This chapter identifies and proposes measures to address the likely effects of the Scheme on socio-economics and land use, during the construction, operation, and decommissioning phases. This includes consideration of the potential for impacts arising with regard to:

- Employment generation;
- Gross Value Added (GVA);
- Public Rights of Way (PRoW);
- Agricultural land; and
- Local amenities and land use (residential properties, business premises, community facilities and development land).

12.1.3 This chapter is supported by the following figures in **ES Volume 2 [EN010131/APP/3.2]**:

- **Figure 12-1**: Agricultural Land Classification

12.1.4 This chapter is supported by the following appendices in **ES Volume 3 [EN010131/APP/3.3]**:

- **Appendix 12-A:** Legislation and Planning Policy;
- **Appendix 12-B**: Summary of Non-Significant Effects on Socio-Economic and Land Use Receptors; and
- **Appendix 12-C**: Agricultural Land Classification Report.

12.2 Consultation

12.2.1 A request for an EIA Scoping Opinion was sought from the Secretary of State through the Planning Inspectorate in 2021 as part of the EIA Scoping Process and a Scoping Opinion was issued on 20 December 2021.

12.2.2 Consultation has been undertaken with key stakeholders including the Planning Inspectorate, Lincolnshire County Council, Nottinghamshire County Council, West Lindsey District Council and Bassetlaw District Council. The following matters have been discussed:

- Undertaking of an agricultural land classification (ALC) survey which has been provided in Table 12-12; and
- Use of 2021 Census data where possible, which is discussed in Section 12.6.5.

12.2.3 Consultation responses in relation to socio-economics and land use, to date, are presented in **ES Volume 3: Appendix 1-C [EN010131/APP/3.3]**.

12.3 Legislation and Planning Policy

12.3.1 Relevant policy documents are listed below. More detailed information regarding these policies can be found in **ES Volume 3: Appendix 12-A [EN010131/APP/3.3]**.

12.3.2 National planning policy and guidance to be considered includes:

- Overarching National Policy Statement for Energy (2011) (NPS EN-1) (Ref 12-9);
- Industrial Strategy: Building a Britain Fit for the Future (2017) (Ref 12-11);
- Planning Practice Guidance (Ref 12-13);
- National Planning Policy Framework (NPPF) (2021) (Ref 12-14); and
- National Policy Statement for Renewable Energy Infrastructure (2011) (NPS EN-3) (Ref 12-18);
- National Policy Statement for Electricity Networks Infrastructure (2011) (NPS EN-5);
- Draft NPS EN-1 (2021) (dNPS EN-1) (Ref 12-22);
- Draft NPS EN-3 (dNPS EN-3) (Ref 12-27); and
- Draft NPS EN-5 (dNPS EN-5) (Ref 12-28).

12.3.3 Local planning policy and guidance to be considered includes:

- Draft Bassetlaw Local Plan (2021) (Ref 12-10);
- Central Lincolnshire Local Plan (2017) (Ref 12-12); and
- West Lindsey Sustainability, Climate Change and Environmental Strategy (2021) (Ref 12-15);
- Sturton Ward Neighbourhood Plan (Ref 12-23);
- Rampton and Woodbeck Neighbourhood Plan 2019-2037 (Ref 12-24);
- Lea Neighbourhood Development Plan 2017-2036 (Ref 12-25); and
- Sturton by Stow and Stow Neighbourhood Plan 2019-2036 (Ref 12-26).

12.4 Assessment Assumptions and Limitations

12.4.1 This assessment is based on baseline and design information available at the time of writing this ES.

12.4.2 The assessment of the significance of effects has been carried out against a benchmark of current socio-economic baseline conditions prevailing around the Scheme, as far as is possible within the limitations of such a dataset. Baseline data is also subject to a time lag between collection and publication. As with any dataset, these conditions may be subject to change over time which may influence the findings of the assessment.

12.4.3 Baseline Conditions reported in Section 12.7 regarding population and labour force and the local economy are based on latest data available at the time of writing. It is likely that conditions when baseline data was collected are changed owing to the ongoing effect of the Covid-19 pandemic on the labour market, businesses, and the economy. The assessment of effects reported in

Section 12.10 is based on the conditions as reported wherever relevant and it is not expected that the assessment of significance would change if they were based on current conditions.

12.4.4 Effects on local amenities and land use during the construction, operation and decommissioning phases are based on assessments taking into consideration the results from the relevant environmental studies that can act in-combination to cause effects to occur. These studies comprise the transport and access, noise and vibration, landscape and visual amenity, and air quality assessments. Where any two of these topics or more each record a significant effect on a receptor or group of receptors, it will be assumed as a worst-case that the effect could occur at the same time.

12.4.5 As noted in **ES Volume 1, Chapter 2: The Scheme [EN010131/APP/3.1]**, the construction period is expected to last between 24 and 36 months. For the purposes of the employment assessment, the 36-month period has been used as this is a worst-case scenario, given employment effects are likely to be lesser (and therefore less beneficial) when spread over a longer period. For other impacts, 24 months is expected to be a realistic worst-case assumption, as it represents the expected minimum build time and therefore the most intense activity onsite (and therefore greatest impacts associated with accommodation, traffic, noise, dust, visual, etc). Should the build period be a longer duration, the intensity would be less for these receptors and the impact on the community therefore the same or lower.

12.4.6 At the time of writing this ES, the average construction employment figures are unknown. Therefore, an assumption has been made based on experience from other solar schemes that AECOM has worked on. This has been calculated using the peak construction employment of 400 workers, and the worst-case construction period length of 36-months, which has then been compared to other solar schemes to generate a reasonable estimate of average employment.

12.5 Study Area

12.5.1 The impacts of the Scheme are considered at varying spatial levels according to the nature of the effects considered. This approach is consistent with the Homes and Communities Agency (HCA), now known as Homes England, guidance entitled ‘Additionality Guide, A Standard Approach to Assessing the Additional Impact of Projects, 4th Edition’ (Ref 12-8).

12.5.2 The Site (comprising both the Solar and Energy Storage Park and the Grid Connection Corridor) is located within the District Council administrative areas of West Lindsey in Lincolnshire and Bassetlaw in Nottinghamshire. **ES Volume 1, Chapter 2: The Scheme [EN010131/APP/3.1]** provides a description of the Site and its surroundings, which mainly consists of agricultural fields under arable production, interspersed with individual trees, hedgerows, tree belts (linear), small woodland blocks and farm access tracks.

12.5.3 The landscape features immediately surrounding the Solar and Energy Storage Park comprise a number of villages and settlements, including Gate Burton, Knaith to the west, and Knaith Park to the north of the Site. Marton (to

the south west) and Willingham by Stow and Kexby (east of the Site) are other villages in the near proximity but not immediately surrounding the Site.

12.5.4 The potential employment impacts arising from the Scheme are considered relative to a 60-minute drive time as this represents the principal labour market catchment area for the Scheme, particularly given the absence of a functional economic market area presented within local policy of both local authorities.

12.5.5 Effects on users of PRoW considers resources likely to be affected by closures and diversions of routes. The study area therefore comprises all PRoW located within the Solar and Energy Storage Park and the Grid Connection Corridor or likely to be impacted by the work (within 500m).

12.5.6 Impacts on agriculture and soils are considered relative to the Site, and effects on local amenities are considered relative to a 500m – 2km radius, depending on the specific impact. This is due to the location of sensitive receptors as shown in Table 12-1.

12.5.7 The principal impacts on local amenities will be considered on a geographical scale based on the finding of other assessments presented in **ES Volume 1, Chapter 10: Landscape and Visual Amenity, Chapter 11: Noise and Vibration, Chapter 13: Transport and Access** and **Chapter 15: Other Environmental Topics (Air Quality) [EN010131/APP/3.1]**.

12.5.8 Table 12-1 presents the different components of the socio-economics and land use effects assessment and the geographical scale at which each component is assessed.

Table 12-1 Socio-Economics and Land Use Impacts by Geographical Scale

Impact	Geographical area of Impact	Rationale for impact area
Employment generation during construction phase, operational phase and decommissioning phase (direct, indirect and induced impacts)	60-minute travel area	Research by Chartered Institute of Personnel and Development (CIPD) found that 90% of national employees commuted for 60 minutes or less each way. This was reported by CIPD in the 2017 Employee outlook 'Employee views on working life' (Ref 12-19).
Gross Value Added (GVA) during construction phase		
Public Rights of Way	500m radius from the Site and beyond this where routes extend outside this radius.	Professional judgement and experience from other schemes in England.
Agriculture and soils	The Site and land that borders the Site.	Professional judgement and experience from other schemes in England.
Local amenities- Residential Properties	500m radius from the Site.	Professional judgement and location of sensitive receptors for impacts arising from the Scheme as informed by other assessments.

Impact	Geographical area of Impact	Rationale for impact area
Local amenities- Business Premises	500m radius from the Site.	Professional judgement and location of sensitive receptors for impacts arising from the Scheme as informed by other assessments.
Local amenities- Community Facilities	2km radius from the Site	Professional judgement and location of sensitive receptors for impacts arising from the Scheme as informed by other assessments. Community facilities are likely to be accessed by residents from a wider catchment, especially in rural areas, owing to a tendency for provision to be sparse. A wider radius has been considered for this receptor in order to fully appreciate the effect of severance on access to these facilities.
Development land	500m radius from the Site.	Professional judgement and experience from other schemes in England.

12.6 Assessment Methodology

12.6.1 There is currently no statutory guidance on the methodology for undertaking assessments of socio-economic and land use effects. The assessment follows best practice methodology from other assessments undertaken on comparable energy infrastructure schemes.

12.6.2 This section sets out the scope and methodology for the socio-economics and land use assessment of the Scheme.

12.6.3 The Scheme has the potential to have a range of effects, some of which would be temporary whilst others would be permanent. For the purposes of this ES chapter, due consideration is given to the Scheme in terms of effects on the following:

- Employment generation;
- Gross Value Added (GVA);
- Public Rights of Way (PRoW);
- Agricultural land; and
- Local amenities and land use (residential properties, business premises, community facilities and development land).

Sources of Information

12.6.4 The following assessment seeks to establish the potential social, economic, and land use effects of the Scheme and assesses these against the current baseline conditions within the Site and in the surrounding area.

Socio-economic Conditions

12.6.5 Baseline data illustrating the existing conditions surrounding the Site has been collected through a desk-based research exercise using publicly available sources, documents, and web-based applications. These sources are listed below. The first results of the 2021 Census were released in June 2022 which included estimates of the number of people by age at national, regional, and local authority level, rounded to the nearest 100. This data has informed the population and deprivation section of the baseline. In addition, it is important to note that 2011 Census data has only been used in the absence of more recent statistics at the relevant geography.

- English Indices of Deprivation (2019) (Ref 12-1);
- 2011 Census Data (Ref 12-2);
- ONS (2017) Gross Value Added (Income Approach) (Ref 12-3);
- ONS (2019) UK Business Register and Employment Survey (Ref 12-4);
- Annual Population Survey (2020) (Ref 12-5);
- ONS Mid-year Population Estimates (Ref 12-6); and
- 2021 Census Data (Ref 12-21).

Desktop Research for Agricultural Land

12.6.6 Natural England 'Technical Information Note 049 – Agricultural Land: protecting the best and most versatile agricultural land (TIN049)' provides guidance on agricultural land quality assessment for development planning (Ref 12-17). A provisional Agricultural Land Classification ('ALC') is available from the Defra mapping service found at: magic.defra.gov.uk. This plan shows land grades across the whole of England. However, the mapping uses a now superseded methodology and is based predominantly on small scale (extensive) assessment from published sources such as geology maps. As this map uses a superseded methodology and is based primarily upon small scale published sources, TIN049 advises that it is of limited value for assessing land quality of large sites. Detailed ALC site sampling has been undertaken for the majority of the Solar and Energy Storage Park rather than relying on the provisional ALC secondary data.

12.6.7 A small area in the north western corner of the Solar and Energy Storage Park was assessed through a desktop assessment rather than soil samples. The desktop assessment concluded that this land is likely to be Grade 3a land. No solar panels or battery storage is proposed for this area and therefore it is not considered necessary to carry out soil sampling for this small area for the purposes of environmental assessment.

12.6.8 Soil sampling was not carried out for the Grid Connection Corridor because the land would be restored following construction of the Scheme. Given that the cable is installed underground, agricultural uses can continue over the land with this area following construction, subject to any agreed restrictions associated with the cable easement. Utilities are frequently present across land being actively farmed and the installation of the route underground minimises any conflict between the uses.

Impact Assessment Methodology

12.6.9 The socio-economic and land use assessment follows the general Impact Assessment Methodology set out in **ES Volume 1, Chapter 5: EIA Methodology [EN010131/APP/3.1]**. However, the specific methodology, impact magnitude, and impact sensitivity criteria for this assessment have been set out below.

Methodology for Determining Effects

12.6.10 As mentioned previously, the economic impact of the Scheme is considered relative to a 60-minute travel time (car or public sector) to the Scheme. In accordance with research this is considered a reasonable timeframe to use as a baseline within which workers would commute to the Scheme.

12.6.11 Additionality has been calculated by considering the overall impact of job gains to the area, the level of leakage, number of displaced jobs and multiplier effects, such as supply chains and worker spending related jobs. These assumptions have been informed by the HCA Additionality Guide (Ref 12-8).

12.6.12 Table 12-2 outlines the values that have been allocated to the construction, operational and decommissioning phases' additionality formula, enabling the tailored calculation of the net additional employment and economic impacts. Justifications for the values have been considered and are summarised in the right-hand column of the table.

Table 12-2 Construction, Operational and Decommissioning Phases Economic Additionality Assumptions

Additionality Factor	Value	Justification
Leakage (% of jobs that benefit those residents outside the Scheme's identified target area)	43%	The analysis of Census 2011[1] data indicates that approximately 43% of workers in the Study Area live outside the Study Area. This corresponds to approximately a medium to high leakage rate as set out by HCA Additionality Guide (Ref 12-8) and implies that a reasonable proportion of benefits will be retained within the Study Area but many will also go to people living outside the area.
Displacement (% of jobs that account for a reduction in related jobs in the Scheme's identified target areas)	25%	For the purpose of this assessment, a low level of displacement (25%) has been assumed, in line with the HCA Additionality Guide.
Multiplier (further economic activity associated with the additional local income, supplier purchase and longer-term development effects)	1.5	The multiplier is a composite figure which takes into account both the indirect jobs created across the study area based on supply chain activity but also the induced employment created through increased spending across the study area. The HCA Additionality Guide provides a 'ready reckoner' of composite multipliers. The study area is likely to have 'average' supply linkages and induced effects

[1] Census 2011 remains the latest available dataset to calculate leakage. Census 2021 data concerning origin destination is due to be released from Spring 2023 (Release plans - Office for National Statistics (ons.gov.uk)).

Additionality Factor	Value	Justification
		based on the scale of its economy. Therefore, a 'medium' multiplier of 1.5 is determined from the HCA guidance to be the most appropriate measure.

12.6.13 The land use and PRoW impacts have been assessed against the significance criteria below using professional judgement.

12.6.14 The principal amenity impacts on residential properties, business premises and community facilities will be informed by other assessments and assessed against the significance criteria using these assessments and professional judgement.

Significance Criteria

12.6.15 The assessment of potential socio-economic effects uses the effect significance terms and definitions described within **ES Volume 1, Chapter 5: EIA Methodology [EN010131/APP/3.1]**. Where possible, socio-economic impacts have been appraised against relevant national standards, such as those provided by Department for Business, Energy & Industrial Strategy (DBEIS) and HCA. Where relevant standards do not exist, professional experience and expert judgement have been used to assess the scale and nature of the effects of the Scheme against baseline conditions.

12.6.16 The assessment aims to be objective and quantifies effects as far as possible. However, some effects can only be evaluated on a qualitative basis. Effects are defined as follows:

- **Beneficial** classifications of significance indicate an advantageous or beneficial effect on an area, which may be minor, moderate or major in effect;
- **Negligible** classifications of significance indicate imperceptible effects on an area;
- **Adverse** classifications of significance indicate a disadvantageous or adverse effect on an area, which may be minor, moderate or major in effect; and
- **No effect** classifications of significance indicate that there are no effects on an area.

12.6.17 The geographical scales considered to assess significance are described in Table 12-1, and are organised around the following:

- **National** levels are associated with effects that impact on England;
- **Regional** levels are associated with effects that impact on the East Midlands; and
- **Local** levels are associated with effects that impact on the Site and neighbouring area.

12.6.18 Duration of effect is also considered, with more weight given to permanent changes than to temporary changes. Permanent effects are generally those associated with the completed scheme. Temporary effects are those associated with the construction works only. For the purposes of this

assessment, short-term effects are of less than one year, medium-term effects of one to five years and long-term effects for over five years.

12.6.19 For socio-economics, there is no accepted definition of what constitutes a significant (or not significant) socio-economic effect. It is however recognised that 'significance' reflects the relationship between the scale of effect (magnitude) and the sensitivity (or value) of the affected resource or receptor. As such the significance criteria of socio-economic effects has been assessed based on expert judgment and professional experience of the author, and relies on the following considerations:

- **Sensitivity of resources/receptors**: specific values in terms of sensitivity are not attributed to socio-economic resources / receptors due to their diverse nature and scale; however, the assessment takes account of the qualitative (rather than quantitative) 'sensitivity' of each receptor and, in particular, their ability to respond to change based on recent rates of change and turnover (if appropriate);
- **Magnitude of impact**: this entails consideration of the size of the effect on people or business in the context of the area in which effects will be experienced; and
- **Scope for adjustment**: the socio-economic assessment is concerned in part with economies. These adjust themselves continually to changes in supply and demand, and the scope for the changes brought about by the Scheme to be accommodated by market adjustment will therefore be a criterion in assessing significance.

12.6.20 Criteria for receptor sensitivity and impact magnitude have been set out below (Table 12-3 and Table 12-4) (although specific sensitivity values are not attributed to socioeconomics receptors as explained above), which have been grouped as follows: economic impacts, local amenities and land use impacts, and tourism impacts. The significance of effect matrix has been provided following the receptor sensitivity and impact magnitude criteria.

Economic Impacts

12.6.21 The following criteria have been set to assess the effects on socio-economics receptors in relation to employment and GVA which have been grouped together as economic impacts.

12.6.22 Table 12-3 identifies the sensitivity criteria that have been used to inform the assessment on socio-economic receptors relating to employment and GVA, in conjunction with the magnitude criteria set out above to establish the significance of the identified effects.

Table 12-3 Economic Impact Sensitivity Criteria

Sensitivity	Description
High	Businesses, workers or residents who have little or no capacity to experience the impact without incurring an economic loss or have capacity to experience an economic gain.

Medium	Businesses, workers or residents that have a moderate or average capacity to experience the impact without incurring a change on their economic well-being.
Low	Businesses, workers or residents that generally have adequate capacity to experience impacts without incurring a change on their economic well-being.
Very Low	Businesses, workers or residents that are unlikely to experience impacts on their economic well-being.

12.6.23 Table 12-4 identifies the magnitude of impact criteria which have been used to assess the socio-economic receptors relating to employment and GVA.

Table 12-4 Economic Impact Magnitude Criteria

Magnitude	Description
High	An impact that is expected to have considerable adverse or beneficial socio-economics effects. Such impacts will typically affect large numbers of businesses, workers or residents.
Medium	An impact that will typically have a noticeable effect of a moderate number of businesses, workers or residents, and will lead to a small change to the study area's baseline socio-economic conditions
Low	An impact that is expected to affect a small number of businesses, workers or residents or an impact that may affect a larger number of receptors but does not materially alter the study area's baseline socio-economic conditions.
Very Low	An impact which has very little change from baseline conditions where the change is barely distinguishable, approximating to a "no change" situation.

Public Rights of Way (PRoW)

12.6.24 The following criteria have been set to assess the effects of users on PRoW focusing on the impact of severance of existing routes and the resulting changes in journey lengths and times and local travel patterns.

12.6.25 Table 12-5 identifies the sensitivity criteria that have been used to inform the assessment on PRoW, in conjunction with the magnitude criteria set out above to establish the significance of the identified effects.

Table 12-5 Public Rights of Way Impact Sensitivity Criteria

Sensitivity	Description
High	PRoW is of high importance with limited potential to substitute with other route options to access with the wider network or community infrastructure. PRoW is of medium importance with limited potential to substitute with other route options to access with the wider network or community infrastructure.

Medium	PRoW is of medium importance with moderate potential to substitute with other route options to access with the wider network or community infrastructure. Or PRoW is of high importance with alternative routes available. Or PRoW is of low importance with limited potential to substitute with other route options to access with the wider network or community infrastructure.
Low	PRoW is of medium importance with alternative routes available. PRoW is of low importance with alternative routes available. Or PRoW is of very low importance with moderate potential to substitute with other route options to access with the wider network or community infrastructure.
Very Low	PRoW is of very low importance with alternative routes available.

12.6.26 Table 12-6 identifies the magnitude of impact criteria which have been used to assess the impacts on PRoW.

Table 12-6 Public Rights of Way Impact Magnitude Criteria

Magnitude	Description
High	Substantial increase/decrease in journey length and/or travel patterns and increased/decreased opportunities for users to access the wider network and/or community infrastructure.
Medium	Noticeable increase/decrease in journey length and/or travel patterns and increased/decreased opportunities for users to access the wider network and/or community infrastructure.
Low	Slight increase/decrease in journey length and/or travel patterns and increased/decreased opportunities for users to access the wider network and/or community infrastructure.
Very Low	No increase or decrease in journey length and/or travel patterns and no increase or decrease in opportunities for users to access the wider network and/or community infrastructure

Agricultural Land

12.6.27 This section outlines the criteria that have been set to assess the effects on agricultural land and soils receptors. Best and Most Versatile ('BMV') agricultural land is a strategic, finite, and irreplaceable national resource with longstanding policy to prevent the unnecessary loss of such land to non-agricultural development. As set out in TIN049 (Ref 12-17), land in ALC Grades 1, 2 and 3a are considered to be the nation's best and most versatile land. Paragraph 174 of the NPPF (Ref 12-14) directs that planning should consider the economic and other benefits of the BMV agricultural land. TIN049 and national planning policy do not seek to enforce continuity of agricultural production or any specific agricultural management.

12.6.28 For all practical intents and purposes, agricultural land cannot be created or translocated, nor can a compensatory area of land have its ALC grade enhanced. There is therefore no viable potential for beneficial effect or mitigation with regard to agricultural land quality.

12.6.29 For the agricultural land resource, the presence of BMV land and the grade of that land determine sensitivity, with Grades 1 and 2 land being of higher sensitivity than land in Grade 3a. The magnitude of change criteria is based on the extent of BMV land lost. The area of 20 hectares (ha) referred to below is derived from the threshold contained within the Town and Country Planning (Development Management Procedure (England) Regulations (Ref 12-20) above which local authorities must consult Natural England before the grant of planning permission. The same threshold is used by Natural England when informing their consultation on projects.

12.6.30 The sensitivity of agricultural land is assessed according to its grade within the ALC, as set out in Table 12-7. This criterion takes into account the above guidance in respect of the economic and other benefits of the BMV and gives little weight to the loss of land in Grades 3b, 4 and 5.

Table 12-7 Receptor Sensitivity Criteria – Agricultural Land

Sensitivity	Agricultural Land
High	Agricultural land predominantly in Grades 1 and 2
Medium	Agricultural land predominantly in Grade 3a or containing some Grade 1 and 2
Low	Agricultural land containing some Grade 3a
Very low	Agricultural land all Grade 3b or lower

12.6.31 The thresholds for the magnitude of impact adopted in this assessment are based on a threshold of the permanent change of 20ha of BMV agricultural land, taken from Article 18(1), paragraph (y) of the Table in Schedule 4 to the Town and Country Planning (Development Management Procedure) Order 2015 (S.I. No 2015/595) (Ref 12-20). These documents do not state that this threshold should be used to determine change significance for the purpose of impact assessment; however, as this is the area of BMV change that triggers a requirement to consult with Natural England, it implies that this is also the point at which the change is no longer considered to be 'not significant'. Therefore, for the purposes of this assessment:

- a total permanent loss/gain of BMV land which exceeds 20ha is considered significant;
- a loss of BMV which is either temporary and reversible after either construction, operation, or decommissioning, or is permanent but falls below the 20ha threshold, is considered as being not significant; and
- a loss of non-BMV land is considered as being not significant.

Local Amenities and Land Use

12.6.32 The following criteria has been set to assess the effects on local amenities which in this Scheme comprises residential properties, business premises and community facilities and development land.

12.6.33 Table 12-8 identifies the sensitivity criteria that have been used to inform the assessment of effects relating to local amenities, which in conjunction with the magnitude criteria set out above to establish the significance of the identified effects.

Table 12-8 Local Amenities Impact Sensitivity Criteria

Magnitude	Description
High	Amenity or land use is of high importance and rarity with limited potential for substitution or access to alternatives.
Medium	Amenity or land use is of medium importance and rarity with moderate potential for substitution or access to alternatives.
Low	Amenity or land use is of low importance and rarity with alternatives available.
Very Low	Amenity or land use is of very low importance and rarity with alternatives available.

12.6.34 The magnitude of change on local amenities (residential properties, business premises, community facilities and development land) is assessed by appraising the level of impact on the receptor and the permanency of change arising from the Scheme. Table 12-9 identifies the magnitude of impact criteria which have been used to assess the impacts on local amenities and land use.

Table 12-9 Local Amenities Impact (Residential properties, business premises, and community facilities) Magnitude Criteria

Magnitude	Description
High	An impact that permanently affects the integrity and value of an amenity; or an impact that considerably enhances the value and quality of an amenity or land use.
Medium	An impact that negatively affects the value of an amenity, but a recovery is possible with no permanent impacts; or an impact that improves key characteristics and features of the amenity or land use.
Low	An impact that negatively affects the value of an amenity, but a recovery is expected in the short-term with no change to its integrity; or an impact that has some beneficial impact on the attributes of the amenity or land use.
Very Low	An impact which is a very minor loss or benefit from baseline conditions where the change is barely distinguishable, approximating to a “no change” situation.

12.6.35 For development land, an assessment has been undertaken of the effects on development land within the study area as identified from a review of planning

applications which have received planning permission, or which are under consideration and allocated sites including Mineral Safeguarding Areas, Mineral Consultation Areas, Waste Consultation Areas and Transport Safeguarded Areas. This is considering temporary and permanent land take of development land which affects its viability. Table 12-10 identifies the magnitude of impact criteria which have been used to assess the impacts on development land.

Table 12-10 Local Amenities Impact (Development Land) Magnitude Criteria

Magnitude	Description
High	An impact that permanently affects the integrity and value of a development land resource; or an impact that considerably enhances the value and quality of such a resource.
Medium	An impact that negatively affects the value of a development land resource, but a recovery is possible with no permanent impacts; or an impact that improves key characteristics and features of such a resource
Low	An impact that negatively affects the value of a development land resource, but a recovery is expected in the short-term with no change to its integrity; or an impact that has some beneficial impact on the attributes of such a resource
Very low	An impact which is a very minor loss or benefit from baseline conditions where the change is barely distinguishable, approximating to a “no change” situation.

Significance of Effects

12.6.36 Socio-economic effects reflect the relationship between the sensitivity of the affected receptor (Table 12-3, Table 12-5, Table 12-7 and Table 12-8) and the magnitude of the impact. Table 12-11 below shows how the assessment of the significance of effects is arrived upon.

Table 12-11 Impact Assessment and Significance

Magnitude of Impact	Sensitivity of Receptor			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Very Low	Minor	Negligible	Negligible	Negligible

12.6.37 In accordance with the methodology set out within **ES Volume 1, Chapter 5: EIA Methodology** of this ES **[EN010131/APP/3.1]**, the following criteria is applied:

- **‘Moderate’** or ‘**major’** are classed **‘significant’**;
- **‘Minor’** are classed as ‘**not significant’**, although they may be a matter of local concern; as
- **‘Negligible’** effects are classed as **‘not significant’**.

12.7 Baseline Conditions

12.7.1 This section describes the baseline environmental characteristics with specific reference to socio-economics and land use. The study area for the baseline conditions comprises of West Lindsey and Bassetlaw local authority areas.

12.7.2 The potential impacts arising from the Scheme are assessed relative to the baseline conditions and benchmarked against regional and national standards where appropriate. These include:

- Existing site and land use;
- Population and deprivation;
- Employment;
- Local economy and labour market; and
- Local receptors.

Existing Baseline

Existing site and land use

12.7.3 **ES Volume 1, Chapter 2: The Scheme [EN010131/APP/3.1]** contains a detailed description of existing conditions within and surrounding the Site.

12.7.4 The landscape of the Site mainly consists of agricultural fields interspersed with trees, woodlands, hedgerows, linear tree belts, farm access tracks, and local transport roads.

12.7.5 Immediately surrounding the Solar and Energy Storage Park are several small rural villages, including Knaith approximately 200m to the west and Gate Burton approximately 50m to the west, Marton approximately 500m to the south west, and Willingham by Stow 700m to the east and Kexby 1.8km to the east. There are limited industrial or commercial land uses within the immediate vicinity.

12.7.6 Other infrastructure within the surrounding area includes 400kV overhead powerlines carried by pylons. These extend from Cottam Substation within the Grid Connection Corridor.

Agricultural land

12.7.7 In regard to agricultural land and soils, mapping of soils has been prepared based on site surveys of the Order limits identifying that it is located within an area of land comprising mainly of Grade 3b (moderate quality agricultural land) with some Grade 3a (good quality agricultural land). Under the ALC system, Subgrade 3a land would form BMV whereas Subgrade 3b would not. Table 12-12 displays the land grades and area occupied by each.

12.7.8 Table 12-12 illustrates the ALC of the land occupied by the proposed Solar and Energy Storage Park whilst Table 12-13 displays the ALC of the Grid Connection Corridor. At the Solar and Energy Storage Park, Subgrade 3a land comprises 11% or approximately 73.6ha of the land within the Solar and Energy Storage Park. Subgrade 3b covers approximately 548.9ha which makes up the majority of the land within the Solar and Energy Storage Park (84%). The area of estimated BMV covers an area that is not proposed to be

used for solar panels, battery storage or the substation so certainty over the ALC grade was not considered necessary to assess the impact of the Scheme.

Table 12-12 Agricultural Land Classification at the Solar and Energy Storage Park

Agricultural Land Class	Total Area (Ha)	Proportion of the Site (%)
Subgrade 3a	73.6	11
Subgrade 3b	548.9	84
Non agricultural	18.2	3
Estimated BMV[2]	6.8	1
Estimated subgrade 3b	4.5	1
Total	**652**	**100**

12.7.9 At the Grid Connection Corridor, the majority of land is made up of estimated BMV land at 74.8ha (43%). The grade of this land is estimated through a desk review, with the full methodology and assessment provided in Appendix 12-C Agricultural Land Classification Report of the ES **[EN010131/APP/3.3]**. Estimated Subgrade 3b land covers 58.4ha (34%) and non-agricultural land accounts for 38.8ha (23%) of the Corridor. As discussed above, soil surveys were not considered necessary to inform the ES as the area could return to agricultural use following construction of the cable route.

Table 12-13 Agricultural Land Classification at the Grid Connection Corridor

Agricultural Land Class	Total Area (Ha)	Proportion of the Site (%)
Estimated BMV	74.8	43
Estimated subgrade 3b	58.4	34
Non agricultural	38.8	23
Total	**172**	**100**

12.7.10 Approximately 2 ha of BMV land is expected to be permanently lost due to construction of the substation and planting. The areas of permanent planting i.e. tree and shrub belt planting, and proposed or strengthened hedgerow are shown on the site layout which can be found in **ES Volume 2: Figure 2-4 [EN010131/APP/3.2]**. The proposed species rich grassland is considered to be temporary loss as this could be returned to agricultural land (e.g. sheep grazing) during the operational phase once the grass has established and in accordance with the OLEMP **[EN010131/APP/7.10]**.

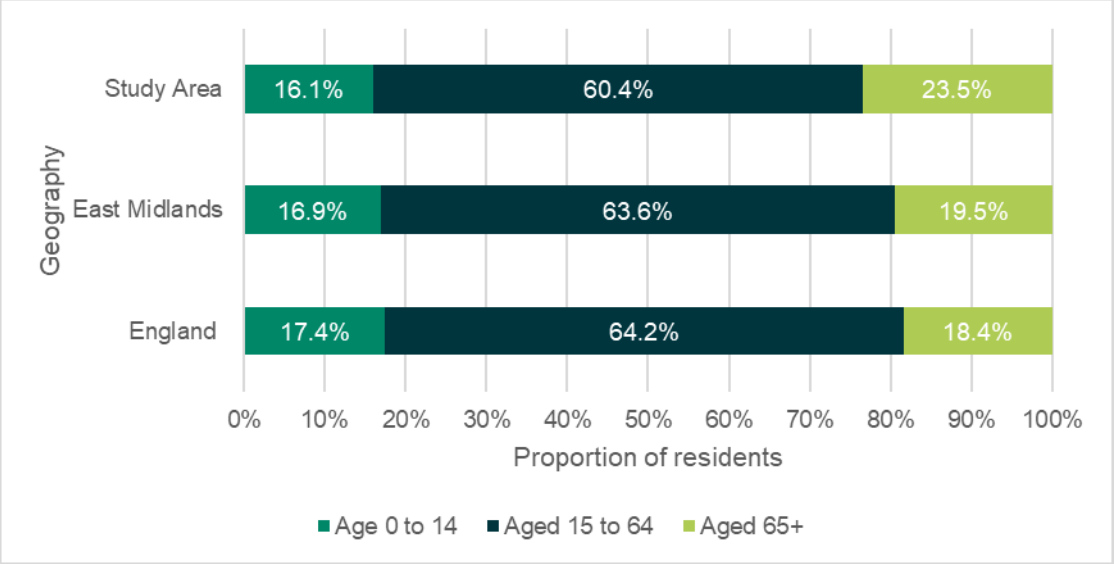
Population and deprivation

12.7.11 According to the 2021 Census (Ref 12-6), the residential population of the Study Area (West Lindsey and Bassetlaw) has increased from 202,113 in 2011 to 213,000 in 2021, representing a 5.4% increase over 10 years. This

[2] Grades estimated using published soils and geology data and nearby observation points.

population growth rate is slightly lower than the overall rates recorded for the East Midlands and England during the same time period (7.7% and 6.6% respectively).

12.7.12 In 2020, 128,700 (60.4%) of residents in the Study Area were of working age (aged 15 to 64). This is a similar rate to the rates recorded for the East Midlands (63.6%) and England as a whole (64.2%).

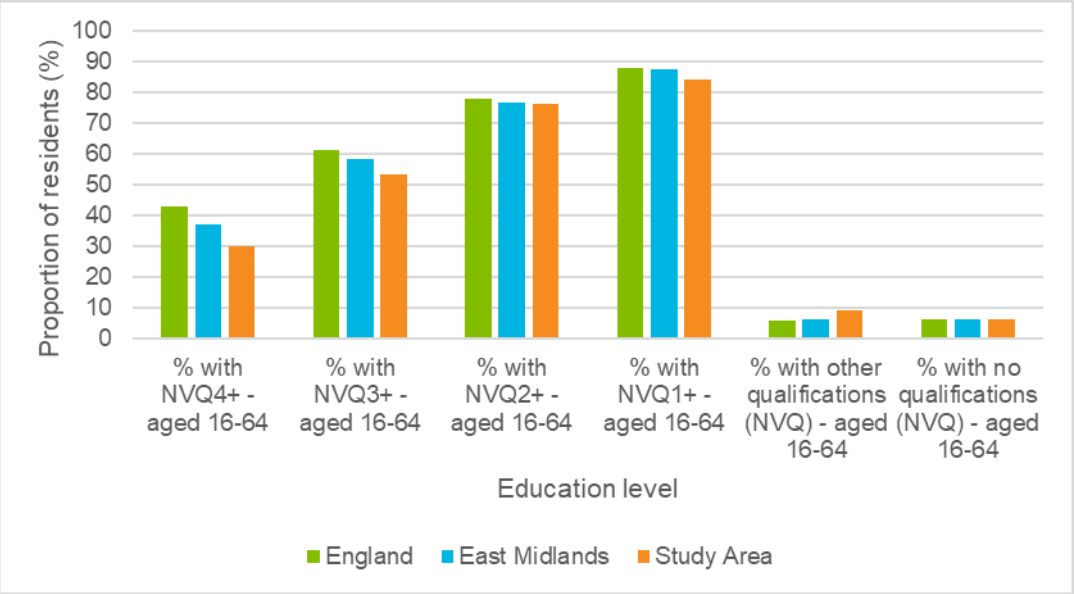


Source: Census 2021 (ONS, 2022)

Figure 12-1 Age Breakdown

12.7.13 In 2020 the Annual Population Survey (Ref 12-5) showed that 30.3% of working age residents in the Study Area have a degree level qualification or higher (National Vocational Qualification [NVQ] Level 4+), similar to the average for the East Midlands (37.2%) but slightly lower than for England (42.8%). The proportion of residents in the Study Area with no qualifications is 6.4%, similar to the rates recorded for the East Midlands (6.2%) and England (6.2%).

Figure 12-2 Educational Attainment



Source: Annual Population Survey (ONS, 2020)

12.7.14 Based on the 2019 Indices of Multiple Deprivation (IMD), which is measured at local authority level, (Ref 12-1), West Lindsey is the 146th most deprived local authority of 317 districts in England (where 1 is most deprived). Within West Lindsey, four of the Lower Layer Super Output Areas (LSOAs) are within the top 10% most deprived LSOAs in England. Of each domain, West Lindsey performs worst for employment deprivation for which it is the 96th most deprived local authority and best for crime deprivation in which it is the 274th most deprived.

12.7.15 Also regarding IMD, Bassetlaw is the 108th most deprived local authority in England. Within the local authority, 5 LSOAs are within the top 10% most deprived in England. The worst performing domain in Bassetlaw is employment deprivation for which the local authority is the 72nd most deprived in England and performs best in terms of living environment deprivation for which it is the 224th most deprived.

Employment

12.7.16 According to Business Register and Employment Survey (BRES) data, employment (amongst 16- to 64-year-olds) reached 2,041,545 in 2020 in the Study Area (TTWA area).

12.7.17 According to the Annual Population Survey, in 2020 the economic activity rate (amongst 16- to 64-year-olds) in the Study Area was 77.7%, generally aligning with the averages of 79.5% in the East Midlands and 79.4% in England as a whole.

12.7.18 The unemployment rate for working age residents in the Study Area was 5.2%, broadly in line with the recorded rate across the East Midlands (5%) and England (4.9%).

Table 12-14 Economic Indicators

Economic Indicator	Study Area	East Midlands	England
Economic activity rate - aged 16-64 (%)	77.7	79.5	79.4
Unemployment rate - aged 16-64 (%)	5.2	5.0	4.9

Source: ONS (2020)

Local Economy and Labour Market

12.7.19 GVA per head (Ref 12-3) is slightly lower in West Lindsey (£15,558) compared to the average for the East Midlands (£21,845) and for England (£28,096). The sectors which contribute the most towards GVA in West Lindsay are the Public Services, Distribution and Real Estate sectors.

12.7.20 The Bassetlaw economy performs worse than the regional economy in a number of measures. In Bassetlaw, GVA per head is £18,703, lower than the East Midlands average and the England average. The Distribution, Manufacturing and Public Services sectors make up the greatest percentages of GVA to the Bassetlaw economy. This means that the average GVA per head for the study area is £17,130.

12.7.21 In relation to this assessment, construction industry GVA per worker is higher at £75,500 in West Lindsey and £52,889 in Bassetlaw. This is £63,529 on average across the study area.

12.7.22 Table 12-15 presents a detailed breakdown of employment by broad industrial group across the Study Area and its comparators. Based on the most recently available data (2020) (Ref 12-5), the highest levels of employment in the Study Area are recorded in the Health, Manufacturing and Retail sectors, representing 14.2%, 12.6% and 9.4% of employment.

12.7.23 The mining, quarrying and utilities broad industrial group (which includes employment from the generation of energy) is one of the least prominent sectors across the Study Area (1.4%) and also in the East Midlands (1.4%) and England (1.1%) as a whole.

12.7.24 Also specific to this assessment, the construction industry contributes 5.5% of employment within the Study Area, similar to the proportions recorded regionally (4.7%) and nationally (4.9%).

Table 12-15 Employment by Broad Industrial Group

Industry	Study Area (%)	East Midlands (%)	England (%)
Agriculture, forestry & fishing	0.3	2.1	1.4
Mining, quarrying & utilities	1.4	1.4	1.1
Manufacturing	12.6	11.9	7.6

Industry	Study Area (%)	East Midlands (%)	England (%)
Construction	5.5	4.7	4.9
Motor trades	2.2	2.2	1.8
Wholesale	4.3	5.0	3.9
Retail	9.4	9.2	9.3
Transport & storage (inc postal)	6.1	7.0	5.2
Accommodation & food services	6.3	6.3	7.1
Information & communication	2.8	3.0	4.5
Financial & insurance	1.5	1.6	3.5
Property	1.7	1.9	2.0
Professional, scientific & technical	5.9	7.1	9.1
Business administration & support services	7.7	6.8	8.8
Public administration & defence	4.6	3.7	4.1
Education	9.2	8.8	8.7
Health	14.2	13.0	12.9
Arts, entertainment, recreation & other services	4.2	4.3	4.3

Source: ONS (2020)

Public Rights of Way (PRoW)

12.7.25 A map of PRoW in close proximity of the Order limits can be found in **ES Volume 2: Figure 2-2 [EN010131/APP/3.2].** PRoW are primarily located west of the River Trent, outside the Site.

12.7.26 There is one PRoW located within the Solar and Energy Storage Park, running for approximately 35m within the Order limits and then running adjacent to the northern boundary of the Solar and Energy Storage Park: LL|Knai|44/2 (footpath), which is the prolongation of LL|Knai|44/1 (footpath). These two PRoW connect Kexby Lane (east) to Station Road / Knaith Hill (west). The two PRoW cover a combined distance of circa 1.2km (about 600m each).

12.7.27 In addition to LL|Knai|44/1 (footpath) a number of PRoWs are also located within proximity to the Site, such as:

- LL|Lea|513/1 (footpath – c.100m), north of the Site, connecting Station Road to Willingham Road;
- LL|Mton|69/1 (footpath – c.500m), on the south-east border of the Site, connecting Willingham Road to Stow Park Road; and

- LL|Mton|68/1 (footpath – c.700m), south of the Site, on the north border of the Grid Connection Corridor, connecting the High Street to Stow Park Road.

12.7.28 The Grid Connection Corridor will pass through:

- LL|Mton|66/4 (footpath – c.600m) going from Trent Port Road to LL|Bram|66/1 (footpath – c.500m) connecting to Gainsborough Road;
- NT|Cottam|FP1 (footpath – c.150m) which runs along the River Trent and forms part of a wider footpath route;
- NT|Cottam|FP3 (footpath – c.1km) connecting Headstead Bank (west) to NT|Cottam|FP1 (east);
- NT|Cottam|RB4 (restricted byway – c.1km) connecting Broad Land (north) to Overcoat Lane (south);
- NT|South Leverton|BOAT16 (byway open to all public – c.1km) connecting Broad Land (north) to Overcoat Lane (south); and
- NT|Rampton|FP5 (footpath – c.1.1km) connecting Torksey Ferry Road (south) to NT|Treswell|FP5 (footpath) which boarders Cottam Power Station.

12.7.29 These PRoW are predominantly used for recreational purposes and form part of a wide network of PRoW in the surrounding area providing residents with alternative routes.

Local Receptors

Residential Properties

12.7.30 The area around the Site is mostly rural and relatively sparsely populated. There are two residential properties within the Site on Clay Lane within the southern portion of the Solar and Energy Storage Park. Larger groups of residential properties are located to the west of the Site in Knaith, to the south west of the Site in Gate Burton and to the north of the Site in Knaith Park.

Business Premises

12.7.31 There are a number of agricultural business premises lying within the Site such as N K Taylor Farm. There is a business management consultancy approximately 500m west of the Site. A furniture shop also lies 500m north of the Site.

Education

12.7.32 The nearest schools are located approximately 1km from the Site. These are Frances Olive Anderson C of E Primary School approximately to the north and The Marton Academy Primary School approximately to the south.

12.7.33 Table 12-16 provides a list of educational facilities within 2km of the Site and their approximate distance from the Site.

Table 12-16 Educational facilities in the study area

Educational facility	Approximate distance from Site
Frances Olive Anderson CofE Primary School	1km
The Marton Academy	1km
Sturton by Stow Primary School	2km
Sturton Cygnets Pre School	2km

Source: AECOM desk-based analysis

Community Facilities

12.7.34 There is a range of community and recreational facilities within the Study Area. Table 12-17 illustrates the facilities within 2km of the Site and their distances from the Site. The closest community facilities are located 500m from the Order limits, each in the villages of Knaith, Gate Burton, Willingham, and Marton. There are no police or fire stations within 2km of the Site. The nearest are Gainsborough Police Station and Gainsborough Fire Station both located approximately 5km north of the Site.

Table 12-17 Community and recreational facilities nearby the Site

Receptor	Description	Approximate distance from Site
St Mary Church	Church in the village of Knaith	0.5km
Church of St Helen	Church in the village of Gate Burton	0.5km
St Helen's Church	Church in the village of Willingham	0.5km
Marton and Gate Burton Village Hall	Village Hall in the village of Marton	0.5km
Fox and Hounds Pub	Public house in the village of Willingham	0.5km
Black Swan Guest House	Accommodation in the village of Marton	0.5km
Rose and Crown Pub	Public house in the village of Upton	1km
Park Springs Community Centre	Community centre in the town of Gainsborough	2km
Lincoln Golf Club	Golf Club in the village of Torksey	2km

Development land

12.7.35 There are no planning permissions within the Site. A planning application for two agricultural barns was submitted to West Lindsey District Council in November 2022, located within the Order limits of the Scheme (see Section 3 of the **Planning, Design and Access Statement [EN010131/APP/3.3]**). Planning permission has not been granted for the project and it is anticipated that a solution can be found for barns to be constructed in a way/ in location that would not affect the Scheme and vice versa. The Cottam Power Station site is identified as being a Priority Regeneration Area within the emerging Local Plan, however, the site is not currently allocated for any particular uses.

12.7.36 As noted in **ES Volume 3: Appendix 1-C [EN010131/APP/3.3]**, discussion on the need for a Mineral Safeguarding Assessment (MSA) was held between the Applicant and Lincolnshire County Council and Nottinghamshire County Council in May 2022. It was agreed that an MSA was not necessary as a standalone DCO Application document due to information provided on the reduced and narrowed routing of the Grid Connection Corridor which passes through an MSA for sand and gravel.

12.7.37 In addition to this, there are no development allocations relating to waste or transport safeguarding and consultation areas in the Local Plan and therefore these are not considered.

Sensitivity of receptors

12.7.38 Table 12-18 identifies the sensitivity of socio-economics receptors identified within the baseline and sets a value based on the criteria highlighted in Table 12-3, Table 12-5, Table 12-7 and Table 12-8.

Table 12-18 Sensitivity of Socio-Economic and Land Use Receptors

Impact	Sensitivity of receptor	Justification
Local Economy (employment creation during construction, operation and decommissioning)	Varies due to type of employment activity – Low to Medium	Relative to size and type of employment sectors
Gross Value Added (GVA) during construction phase	Medium	Relative to scale of existing GVA for local authority areas and nationally
Impact on Public Rights of Way	Very Low or Low	PRoW within Order limits are predominantly used for recreational purposes
Agricultural land	Low	Agricultural land contains some Grade 3a but mostly 3b
Local amenities and land use – residential properties	Varies due to type of amenity – Medium to High	Residential properties have high sensitivity to disruption during night time and medium sensitivity during day time
Local amenities and land use – business premises	Varies due to type of amenity – Low to Medium	Relative to scale of employment
Local amenities and land use – community facilities	Varies due to type of amenity – Low to Medium	Relative to nature of use
Local amenities and land use – development land	Variable by use – Low to Medium	Based on availability of alternative development opportunities.

Future Baseline

12.7.39 The future baseline scenarios are set out in **ES Volume 1, Chapter 5: EIA Methodology [EN010131/APP/3.1]**.

12.7.40 In the absence of the Scheme, the future baseline is anticipated to be largely the same as the existing baseline for socio-economics and land use. However, it would be reasonable to expect that the population would increase. The population of West Lindsey is expected to increase from 95,898 in 2020 to 102,249 in 2040 which represents an increase of 6.6%. In addition, the population of Bassetlaw is projected to increase from 118,633 to 131,199 which represents a larger increase of 10.6%. In the East Midlands and England as a whole, there is expected to be increases of 11.1% and 7.9% respectively.

12.7.41 Table 12-19 illustrates the population projections broken down by age group. It shows that by 2040, both the 0–15-year-old and the 16-64-year-old population will make up a lower proportion of the total population across all of the geographies. Instead, there will be a larger share of 65 and over residents.

Table 12-19 Population Projections by age breakdown

		2020	2025	2030	2035	2040
West Lindsey	Aged 0 to 15 (%)	17.2	16.7	15.7	15.2	15.1
	Aged 16 to 64 (%)	57.7	56.5	54.9	53.5	52.9
	Aged 65+ (%)	25.1	26.9	29.4	31.4	32.0
Bassetlaw	Aged 0 to 15 (%)	18.0	17.8	17.1	16.7	16.8
	Aged 16 to 64 (%)	59.6	58.3	56.9	55.7	55.1
	Aged 65+ (%)	22.4	23.8	25.9	27.6	28.2
East Midlands	Aged 0 to 15 (%)	19.2	18.6	17.6	17.1	17.1
	Aged 16 to 64 (%)	62.3	61.7	60.9	59.9	59.1
	Aged 65+ (%)	18.5	19.7	21.5	23.0	23.8
England	Aged 0 to 15 (%)	18.6	18.2	17.3	16.8	16.9
	Aged 16 to 64 (%)	61.7	61.0	60.2	59.1	58.4
	Aged 65+ (%)	19.7	20.8	22.5	24.0	24.8

12.7.42 In terms of the local economy, it would be reasonable to expect that employment and GVA would increase, associated with the expected increase in population. It is expected that PRoW will continue to be used, predominantly

for recreational purposes. Despite an increased population (+8.8% by 2040 from 2020, or 18,900 people in Bassetlaw and West Lindsey), it is not expected that there will be a significant change to use of these PRoW. Businesses and community facilities may open and close however it is not expected that there will be any perceptible changes to the local economic baseline assessment and the Scheme should be assessed against current baseline conditions and policies. These changes are not considered to constitute significant changes to baseline.

12.7.43 The future baseline for the study area is anticipated to be similar for agricultural land use to that found at present. ALC grading is deliberately designed to be insensitive to good or bad land management. Occupancy of farm land can change, but a change in tenure between farm businesses is unlikely to significantly change land use. Any change to external factors such as the successor to the Common Agricultural Policy support will not be confined to farmland within the study area.

12.8 Potential Impacts

12.8.1 Mitigation measures being incorporated into the Scheme design and to be undertaken during construction of the Scheme are set out in Section 12.9. Prior to the implementation of any mitigation, the proposed Scheme has the potential to affect employment, GVA, PRoW, agricultural land, and local amenities and land use (positively or negatively), during construction, operation and during decommissioning, in the following ways:

Employment

12.8.2 Generation of employment within the study area, with consideration of leakage, multiplier effect, and displacement.

12.8.3 Impacts on the local accommodation market to cater for the potential increase in staff and contractors in the area.

12.8.4 Potential impacts on employment as a result of the Scheme are not expected to be significant.

GVA

12.8.5 Increased GVA at a local and national level in the construction sector due to increased employment.

PRoW

12.8.6 Impacts on the following PRoW where permanent land take is required. These routes are shown in **ES Volume 2: Figure 2-2 [EN010131/APP/3.2]**.

- LL|Knai|44/2 (footpath), which is the prolongation of LL|Knai|44/1 (footpath). These two PRoW connect Kexby Lane (east) to Station Road / Knaith Hill (west). The two PRoW cover a combined distance of circa 1.2km (about 600m each);
- LL|Mton|66/4 (footpath – c.600m) going from Trent Port Road to LL|Bram|66/1 (footpath – c.500m) connecting to Gainsborough Road;
- NT|Cottam|FP1 (footpath – c.150m) which runs along the River Trent and forms part of a wider footpath route;

- NT|Cottam|FP3 (footpath – c.1km) connecting Headstead Bank (west) to NT|Cottam|FP1 (east);
- NT|Cottam|RB4 (restricted byway – c.1km) connecting Broad Land (north) to Overcoat Lane (south);
- NT|South Leverton|BOAT16 (byway open to all public – c.1km) connecting Broad Land (north) to Overcoat Lane (south); and
- NT|Rampton|FP5 (footpath – c.1.1km) connecting Torksey Ferry Road (south) to NT|Treswell|FP5 (footpath) which boarders Cottam Power Station.

Agricultural land

12.8.7 Loss of land and any buildings or infrastructure required to construct the Scheme, both temporarily and permanently. The Scheme would require land take from agricultural land, including BMV, and potentially result in severance within holdings or access restrictions to agricultural infrastructure.

12.8.8 The Solar Energy and Storage Park contains 73.6ha of BMV and 6.8ha of estimated BMV land, of which approximately 2 ha will be permanently lost due to construction of the substation and permanent planting on site. The BMV land in the north west of the Scheme (6.2ha) is a Solar Panel Exclusion Zone, and therefore could continue to be used for agriculture. The remainder and vast majority of BMV land affected (approximately 73 ha) will be temporary and reversible following decommissioning.

12.8.9 The Grid Connection Corridor contains 74.8ha of estimated BMV, all of which will be returned to agriculture after construction.

Local amenities and land use

12.8.10 Land required temporarily and/or permanently that is used for private property or housing, community land and assets, including land or assets used for recreation (this comprises impacts to open space and blue space e.g. play space and rivers), development land and businesses.

12.9 Embedded Mitigation Measures

12.9.1 Mitigation measures being incorporated in the design and construction of the proposed Scheme are set out below. Embedded mitigation measures form an integral, committed and deliverable part of the scheme design or comprise standard construction practices. They are assumed to be implemented and are therefore factored into the determination of residual significant effects. The mitigation set out in **Chapters 10, 11, 13,** and **15** of the ES **[EN010131/APP/3.1]** to reduce construction and operational effects will in turn mitigate effects on the local community and existing facilities from a socio-economic and land use perspective The following embedded mitigation measures have been identified.

Table 12-20 Embedded Mitigation Measures

Embedded design mitigation chapters	Paragraph reference of mitigations	Summary
Chapter 10: Landscape and Visual Amenity	Section 10.8	Modifications have been made to the design of the Scheme to avoid and reduce effects of land-take within the Order limits. Changes to design consider residential offsets, the BESS, layout, green infrastructure, landscape strategy, and conservation of existing vegetation.
Chapter 11: Noise and Vibration	Paragraphs 11.9.2 to 11.9.14	Chapter 11 incorporates a wide variety of mitigation measures such as design layout to minimise noise to receptors; construction noise monitoring scheme; compliance with UK noise emission requirements; and monitoring of noise complaints.
Chapter 13: Transport and Access	Section 13.9	Chapter 13 also includes a wide variety of mitigation measures. Key measures include: implementation of a Construction Traffic Management Plan (CTMP); maintaining access to PRoW or providing temporary diversions; reducing HGV movements to certain times of day to avoid increasing traffic; and providing onsite parking for staff.
Chapter 15: Other Environmental Topics (Air Quality)	Paragraphs 15.3.57 to 15.3.61	The Air Quality section of Chapter 15 discusses that adoption of good site practice will be implemented through measures to control dust as outlined within the IAQM's 'Guidance on the assessment of Dust from Demolition and Construction' document. A range of other mitigation measures can be found listed in Table 15-3.

12.9.2 In terms of agricultural land, the land required for construction of the grid connection could be restored to enable agricultural use in this area during operation. The Scheme has been designed to take into account the quality of agricultural land, for example, the location of the BESS was selected to minimise the impact on BMV whilst balancing surface water, flood risk and visual considerations.

12.9.3 In addition, an **Outline Soil Management Plan (Outline SRMP) [EN010131/APP/7.12]** will be adhered to during construction and operation of the Scheme. The Plan sets out principles and actions to be followed for the handling, storage, and reinstatement of soil to be used for the Scheme to minimise adverse effects on the nature and quality of the soil resource.

12.10 Assessment of Likely Impacts and Effects

12.10.1 The impacts and effects (both beneficial and adverse) associated with the construction, operation and decommissioning of the Scheme are outlined in the sections below.

Construction (assumed to be 2025 to 2027-28)

Employment

12.10.2 The estimated construction period is expected to last a maximum of 36 months. This period represents the worst-case for the purposes of the employment assessment. Therefore, likely effects will be of a medium-term temporary nature. Although these jobs are temporary, they represent a positive economic effect for a substantial period that can be estimated as the function of the scale and type of activities required to construct the Site.

12.10.3 It is estimated that the Scheme will require an average of 323 gross direct full-time employment (FTE) jobs on-site per day during the construction period, equivalent to 323 FTE jobs per annum. This is based on activities required and will fluctuate during the period therefore being both higher and lower than average at times.

Leakage

12.10.4 Leakage effects are the benefits to those outside the study area, defined as a 60-minute travel area as shown in Table 12-1. It is estimated that 57% of construction staff could be sourced from the Study Area based on Travel to Work Data (Ref 12-2). This will be subject to labour availability and take-up at the time of construction however it is considered to be a reasonable assumption on which to base this assessment. As such, 43% of staff would be likely to reside outside of this Study Area (mainly in Lincoln, North Lincolnshire, and Doncaster (Ref 12-2)). This indicates that although a reasonably high proportion of employment opportunities will be retained in the Study Area, a noticeable number of jobs will be taken up by people living outside of the Study Area. Whilst it is not a specific consideration of the assessment, it is noted that a larger proportion of the jobs taken up by people living outside the area will likely be in more specialised solar PV professions owing to the scarcity of such resources within localised areas compared with less skilled professions.

12.10.5 An adjustment of 43% has therefore been applied to the estimated 323 gross direct construction jobs on-site on average during the construction period to estimate the jobs created within the target area. On this basis it is estimated that the Scheme will create 184 FTE jobs per annum for residents within the study area during the construction period. This is considered a reasonable assumption based on the Applicant's experience constructing other solar PV developments in the UK.

Displacement

12.10.6 Displacement measures the extent to which the benefits of a development are offset by reductions in output or employment elsewhere. Any additional demand for labour cannot simply be treated as a net benefit since it has the potential to displace workers from other positions and the net benefit is reduced to the extent that this occurs.

12.10.7 Construction workers typically move between construction projects when delays occur or to help the workforce meet construction deadlines. Due to the flexibility of the labour market, construction labour force displacement has been assumed to be low.

12.10.8 The HCA Additionality Guide (Ref 12-8) provides standards (or 'ready reckoners') for displacement. Within the context of a construction project in the study area, a low displacement factor for 25% is considered appropriate according to the HCA Additionality Guide. This factor is a best practice approach in the absence of specific local information that might provide a defensible justification for a different level of displacement being used. Applying this level of displacement to the total gross direct employment figure results in a total net direct employment figure of 242 FTE jobs per annum during the construction period.

Multiplier Effect

12.10.9 In addition to the direct employment generated by the construction of the Scheme, there will be an increase in local employment arising from indirect and induced effects of the construction activity. Employment growth will arise locally through manufacturing services and suppliers to the construction process (indirect or supply linkage multipliers). Additionally, it is assumed that part of the income of the construction workers and suppliers will be spent in the Study Area, generating further employment (in terms of induced or income multipliers).

12.10.10 The effect of the multiplier depends on the size of the geographical area that is being considered, the local supply linkages and income leakage from the area. The HCA Additionality Guide provides 'ready reckoner' composite multipliers (the combined effect of indirect and induced multipliers) to account for this. This is a best practice approach in the absence of specific information that might provide a defensible justification for another multiplier effect level being used, appropriate to the sectors concerned. For the study area, a medium multiplier effect of 1.5 has been considered appropriate. Applying the 1.5 multiplier to the total net direct employment figure of 242 workers results in additional net indirect and induced employment of 121 jobs per annum during the construction period[3].

Net Construction Employment

12.10.11 Table 12-21 presents the temporary annual employment generated by the Scheme accounting for leakage, displacement, and multiplier effects. The Scheme will support, on average, 363 total net jobs per annum during the construction period. Of these, 207 jobs per annum will be expected to be taken-up by residents within the study area.

Table 12-21 Net Additional Construction Employment per annum from the Scheme

	Study Area (60-minute travel area)	Outside Study Area	Total
Gross Direct Employment	184	139	323
Displacement	-46	-35	-81
Net Direct Employment	138	104	242
Indirect & Induced Employment	69	52	121

[3] Induced and indirect jobs are calculated as 0.5 job for every direct jobs based on a multiplier of 1.5 (with total jobs – direct, indirect and induced – being equal to 1.5 times the number of direct jobs).

	Study Area (60-minute travel area)	Outside Study Area	Total
Total Net Employment[4]	207	156	363

Source: AECOM Calculations 2022. Please note that figures have been rounded to the nearest whole number.

12.10.12 The direct, indirect and induced employment, expenditure and upskilling created from the construction of the Scheme must be judged in the context of the labour pool of construction workers in the Study Area (60-minute travel area) (106,000). Taking this into account, the impact of construction employment generation in the Study Area has been assessed as temporary low beneficial, which results in a medium-term temporary **minor beneficial** effect. This is **not considered significant**.

12.10.13 Analysis of the hotel, bed and breakfast and inns accommodation sector has been undertaken to assess the likely capacity against the demand from the potential peak construction workforce (400), and indicates, considering existing seasonal demand and typical occupancy, that capacity is sufficient, and that the workforce can be accommodated within existing provision within a 30-minute drive time radius of the Site. This is shown in Table 12-22. Further analysis to identify accommodation within a 60-minute drive time radius indicates that there would typically be 1,934 remaining rooms at a minimum available after taking into account the construction workforce and typical seasonal occupancy levels. This is shown in Table 20-23. This analysis demonstrates that at peak workforce employment and peak occupancy levels, 100% of the Scheme's peak construction workers could be accommodated within both a 30-minute and 60-minute drive time of the Site. Given this, there would be **no effect** on the hotel, bed and breakfast, and inns accommodation sector arising from the Scheme.

12.10.14 It can also be noted that this analysis only takes into consideration the hotel, bed and breakfast and inns accommodation sector when there exists alternative accommodations (such as Airbnb, serviced apartments, etc.) that could be consider to cater for the demand and therefore mitigate further any impact of accommodation demand.

Table 12-22 Accommodation Capacity within 30-minute drive time radius of the Site

Month	Room Occupancy[1]	Rooms Typically Available after Existing Demand	Construction Workers (peak)	Remaining Rooms Available	Remaining Rooms Available (%)
January	29%	3,251	400	2,851	62%
February	34%	3,022	400	2,622	57%
March	37%	2,885	400	2,485	54%
April	38%	2,839	400	2,439	53%

[4] Sum of Net Direct Employment and Indirect & Induced Employment

Month	Room Occupancy[1]	Rooms Typically Available after Existing Demand	Construction Workers (peak)	Remaining Rooms Available	Remaining Rooms Available (%)
May	46%	2,473	400	2,073	45%
June	61%	1,786	400	1,386	30%
July	70%	1,374	400	974	21%
August	77%	1,053	400	653	14%
September	77%	1,053	400	653	14%
October	77%	1,053	400	653	14%
November	72%	1,282	400	882	19%
December	58%	1,923	400	1,523	33%

Source: CoStar (2022) and VisitBritain (2021)

Table 20-23 Accommodation Capacity within 60-minute drive time of the Site

Month	Room Occupancy [1]	Rooms Typically Available after Existing Demand	Construction Workers (peak)	Remaining Rooms Available	Remaining Rooms Available (%)
January	29%	7,204	400	6,804	67%
February	34%	6,696	400	6,296	62%
March	37%	6,392	400	5,992	59%
April	38%	6,291	400	5,891	58%
May	46%	5,479	400	5,079	50%
June	61%	3,957	400	3,557	35%
July	70%	3,044	400	2,644	26%
August	77%	2,334	400	1,934	19%
September	77%	2,334	400	1,934	19%
October	77%	2,334	400	1,934	19%
November	72%	2,841	400	2,441	24%
December	58%	4,261	400	3,861	38%

Source: CoStar (2022) and VisitBritain (2021)

Gross Value Added (GVA)

12.10.15 Applying the average gross value added per construction worker in the area to the total number of construction workers generated from the Scheme gives

the total GVA arising from the construction period. This is shown in Table 12-24. Note that this has been calculated based on the compound average GVA per worker in the construction sector in West Lindsey and Bassetlaw as the appropriate benchmark as data is published at this level rather than the more granular, LSOA-derived, study area. By taking an average of the two local authorities' construction GVA per worker rates, output generated by activity in the construction sector is estimated to be £63,529 per worker. By applying this figure to the total direct construction workers generated by the Scheme, it is estimated that construction will contribute approximately £23.1m (£m) to the national economy, of which £13.1m would likely be within the study area.

Table 12-24 Gross Value Added per annum from the Scheme during the Construction Phase

	Study Area (60-minute travel area)	Outside Study Area	Total
GVA (£)	13,144,871	9,916,306	23,061,176

12.10.16 Adding the total construction GVA generated to the existing construction GVA of the Study Area, it is expected that construction GVA per worker will be £68,955, an increase of £5,426, during this phase (from £63,529 currently in West Lindsey and Bassetlaw).

12.10.17 The impact of direct GVA generation from the construction phase on the economy within the Study Area has been assessed as medium-term temporary low beneficial, which results in a temporary **minor beneficial** effect. This is **not considered significant**.

12.10.18 The impact on the national economy as represented by the total GVA generated has been assessed as medium-term temporary low beneficial, which results in a temporary **minor beneficial** effect. This is **not considered significant**.

Public Rights of Way

12.10.19 Changes to journey times, local travel patterns, and certainty of routes for users would arise from the temporary diversions of PRoW. Effects during construction on relevant routes are set out below.

12.10.20 The Site intersects a small section of a PRoW at Knaith Park. Although the intersection is slight, construction vehicles will cross the PRoW to access a field within the north western portion of the Site. The PRoW will be managed throughout the construction phase to ensure that routes can continue to be used as safely as possible.

12.10.21 In a small number of cases, where PRoW cross the grid connection construction spread, diversions will be put in place as described in the **Outline PRoW Management Plan [EN010131/APP/7.8]**. Diversions would all be temporary and would be in place for up to a maximum of six weeks depending on the construction activities taking place.

12.10.22 PRoWs that will be affected are listed below:

- LL|Knai|44/2 (footpath), which is the prolongation of LL|Knai|44/1 (footpath). These two PRoW connect Kexby Lane (east) to Station Road / Knaith Hill (west). The two PRoW cover a combined distance of circa 1.2km (about 600m each);
- LL|Mton|66/4 (footpath – c.600m) going from Trent Port Road to LL|Bram|66/1 (footpath – c.500m) connecting to Gainsborough Road;
- NT|Cottam|FP1 (footpath – c.150m) which runs along the River Trent and forms part of a wider footpath route;
- NT|Cottam|FP3 (footpath – c.1km) connecting Headstead Bank (west) to NT|Cottam|FP1 (east);
- NT|Cottam|RB4 (restricted byway – c.1km) connecting Broad Land (north) to Overcoat Lane (south);
- NT|South Leverton|BOAT16 (byway open to all public – c.1km) connecting Broad Land (north) to Overcoat Lane (south); and
- NT|Rampton|FP5 (footpath – c.1.1km) connecting Torksey Ferry Road (south) to NT|Treswell|FP5 (footpath) which boarders Cottam Power Station.

12.10.23 As noted in Section 12.7.29, these PRoW are predominantly used for recreational purposes and form part of a wide network of PRoW in the surrounding area as shown in **ES Volume 2: Figure 13-8 [EN010131/APP/3.2]**. No permanent closures would result from the Scheme and diversions would allow any routes affected during construction to remain open.

12.10.24 Due to the limited scale of impacts upon PRoW, these effects are assessed to be low adverse, which results in a **minor adverse** effect. This is **not considered significant**.

Agricultural Land

12.10.25 During the construction phase, temporary and permanent use of agricultural land will occur. The total area of agricultural land required during the construction period for the Scheme (including the Grid Connection Corridor) would be approximately 767ha as shown in Table 12-25.

Table 12-25 Agricultural Land required for the Construction of the Scheme (including the Grid Connection Corridor)

Grade/subgrade	Area (ha)	% of the land[5]
Subgrade 3a	73.6	9%
Subgrade 3b	548.9	66%
Non agricultural	57	7%
Estimated sub-grade 3a (BMV)[6]	81.6	10%
Estimated subgrade 3b[5]	62.9	8%
Total	**824**	**100%**

[5] Percentage calculations rounded to sum 100%
[6] Grades estimated using published soils and geology data and observation points.

12.10.26 The Scheme has been designed to take into account the quality of agricultural land such as positioning the permanent infrastructure (the substation and the BESS) to minimise use of BMV land as far as practicable whilst balancing surface water, flood risk, access, safety and visual considerations. The substation and associated planting is estimated to take a maximum of 2ha of grade 3a or estimated BMV land.

12.10.27 According to Defra[7], the East Midlands has 1.2 million ha of farmland (England as a whole has 9.2 million ha of farmland). In 2021, West Lindsey was reported as having 106,474 ha of farmland[8]. The 824ha required for construction constitutes 0.8% of the total farmland in West Lindsey and <0.01% of arable farmland in East Midlands.

12.10.1 In terms of BMV, the East Midlands contains 618,789 ha of BMV (based on the Post 1988 dataset in England). The Scheme will utilise approximately 155.2ha of BMV or estimated BMV for construction, and approximately 80.4 ha of BMV or estimated BMV during operation (as the area of land within the grid connection corridor is required for construction only and will be restored to enable agricultural use in this area during operation).

12.10.2 Of the 80.4 ha BMV required during operation, up to an assumed maximum of 2ha is lost permanently due to not being returned to farm use following decommissioning, and 6.2 ha is within a solar exclusion zone and therefore could remain in agricultural use throughout operation. The remaining 73 ha would be used for ecological mitigation (species rich grassland) or under solar panels, and therefore, could remain in agricultural use throughout operation.

12.10.1 The BMV being used by the Scheme during its operation represents 0.01% of the regional BMV. The latter – the BMV not being returned to farmland at the end of the Scheme - represents <0.001% of the region's BMV.

12.10.2 These figures are all 1% or less and are therefore considered to support the conclusions of the ES that the effect on BMV land is not significant.

12.10.3 The area of land within the Order Limits which would be required on a temporary basis i.e. during construction only and can be returned to farming use (e.g. sheep farming, but not arable farming) after construction comprises approximately 147ha (excluding the 2ha area for the substation/permanent planting, and 6.2 ha which is within a solar exclusion zone and therefore unaffected) of grade 3a BMV or estimated BMV land. This includes the area underneath the panels where some sheep farming could be undertaken (78.4ha grade 3a and estimated BMV) in accordance with the Outline Landscape and Ecology Management Plan (OLEMP**) [EN010131/APP/7.10],** as well as the Grid Connection Corridor (74.8 ha of estimated BMV) which can be returned to agricultural use after construction. As there is no land in Grade 1 or 2, the sensitivity is assessed to be low.

12.10.4 In summary, as the land within the Grid Connection Corridor and the majority of land within Solar Energy and Storage Park can be returned to agriculture after the construction phase, and the permanent loss of grade 3a and

[7] Defra (2017) Agricultural facts: England regional profiles - East Midlands (publishing.service.gov.uk)
[8] West Lindsey District Council West Lindsey facts and figures | West Lindsey District Council (west-lindsey.gov.uk)

estimated BMV land is 2ha which falls below the 20ha threshold, the effect of the Scheme on the use of BMV agricultural land is assessed to be low adverse which results in a **minor adverse** effect. This is **not considered significant**.

12.10.5 Construction work will involve relatively little displacement of the soil material, with the dominant impact being the trafficking over land with delivery and construction vehicles and the soil compaction this might cause, although measures can be adopted to minimise impacts.

12.10.6 The nature of the works for the Grid Connection Corridor (cable burial and restatement) indicate that temporary impacts only would occur, with the land returned to agricultural use following construction.

Local Amenities and Land Use

Residential Properties, Business Premises, and Community Facilities

12.10.7 There is potential for noise, air quality, visual and traffic effects arising from construction of the Scheme to impact on the amenity of residents, businesses and users of community facilities.

12.10.8 Taking into account the residual effect assessment results of the air quality, noise, traffic and visual assessments, there are no residents, businesses or community facilities that would likely experience a significant effect on their amenity during construction from effects acting in combination. Therefore, there are no impacts arising from the Scheme on these local amenities during construction which results in **no effect**.

Development Land

12.10.9 There are no planning applications, permissions or allocations affected by land required for the construction of the Scheme and thus no effects have been assessed. The Cottam Power Station site is identified as being a Priority Regeneration Area within the emerging Local Plan, however, the site isn't currently allocated for any alternative uses.

Summary of Effects

12.10.10 There are no significant effects in relation to socio-economics and land use expected during the operational phase of the Scheme. Please see **ES Volume 3: Appendix 12-B** for a summary of non-significant effects **[EN010131/APP/3.3].**

Operation (assumed to be 2028 to 2088)

Employment

12.10.11 The Scheme will generate long-term jobs once it is complete and operational. In estimating operational employment generation, it is important to consider not just the gross effects of the Scheme, but also net effects considering leakage, displacement, and multiplier effects.

Existing Employment

12.10.12 The Site consists of agricultural land, with an estimation of equivalent to 1.5 existing jobs at the Site related to agricultural activities. Therefore, there is expected to be some employment loss as a result of the Scheme.

12.10.13 'Existing employment' refers to the employment outcomes which would have occurred without intervention. For example, if the Scheme were to result in a disruption to any existing economic activity currently occurring in relation to the Site.

Total Net Operational Employment

12.10.14 The Applicant has estimated there will be a gross number of 14 FTE jobs generated by the Scheme once operational.

12.10.15 It is assumed that a leakage of 43% outside the study area, displacement of 25% and a 1.5 multiplier will occur for operational employment, similar to the construction period. These assumptions are based on Travel to Work data, and guidance within the HCA Additionality Guide as discussed in Sections 12.10.4 to 12.10.10.

12.10.16 it is estimated that the Scheme will result in a net creation of an estimated 14 jobs, of which at least 7 are within the study area. Accounting for the existing employment effects outlined above, the total net employment of the Scheme is 13 jobs. This is presented in Table 12-26.

Table 12-26 Total net employment during operation of the Scheme

	Study Area	Outside Study Area	Total
Gross Direct Employment	7	7	14
Displacement	-2	-2	-4
Net Direct Employment	5	5	10
Indirect and Induced Employment	2.5	2.5	5
Existing Employment	-1	-1	-2
Total Net Employment	**6.5**	**6.5**	**13**

Source: AECOM calculations. Note that figures have been rounded to nearest whole number.

12.10.17 The impact of operational employment generation in the local economy would be slightly increased by the Scheme. However, the increase would be marginal and therefore the impact has been assessed as permanent, very low beneficial which results in a permanent **negligible** effect, which is **not considered significant**.

Public Rights of Way

12.10.18 There is one PRoW located within the Solar and Energy Storage Park, and the Grid Connection Corridor will pass through 6 PRoW. PRoW are not expected to be affected during operation, however in the event that PRoW closures are required for maintenance activities temporary diversions will be put in place. Due to no closures expected, the impact on users of PRoW has

been assessed as very low which results in **no effect**. In a worst case scenario, if temporary diversions are needed this will result in a temporary **negligible** effect which is **not considered significant**.

Agricultural Land

12.10.19 Effects on agricultural land use would occur as long-term effects arising from the construction of the Scheme and hence have been assessed in the construction phase. As stated in paragraph 12.10.4 this is assessed as a **minor adverse** effect which is **not considered significant**. The area of land within the Grid Connection Corridor can be returned to agriculture, and therefore only the grade 3a and estimated BMV land within the BESS / permanent planting areas (2 ha) within the Solar and Energy Storage is affected during the operational phase, as the land under the solar panels, within species rich grassland areas and solar exclusion zones can continue to be used for agriculture. Therefore, there are no new potential or additional impacts on agricultural land during the operation of the scheme.

Local Amenities and Land Use

Residential Properties, Business Properties and Community Facilities

12.10.20 There is potential for noise, air quality, and visual effects arising from the operation of the Scheme which would impact on the amenity of residents, businesses and users of community facilities. There are around 200 properties located within 500m of the Site. In addition, there are two businesses within 500m of the Site and nine community facilities within 2km of the Site.

12.10.21 Taking into account the residual effect assessment results of the noise, traffic, air quality and visual assessments, there are no residents, community facilities or businesses that would likely experience a significant effect on their amenity during operation. Therefore, there are no impacts arising from the Scheme on local amenities which results in **no effect**.

Development Land

12.10.22 There are no planning applications, permissions or allocations affected by land required for the operation of the Scheme and thus no effects have been assessed. The Cottam Power Station site is identified as being a Priority Regeneration Area within the emerging Local Plan, however the site isn't currently allocated for any alternative uses.

Summary of Effects

12.10.23 There are no significant effects expected during the operational phase of the Scheme. Please see **ES Volume 3: Appendix 12-B** for a summary of non-significant effects **[EN010131/APP/3.3]**.

Decommissioning (assumed to be 2088 to 2089-2090)

Employment

12.10.24 The year for the decommissioning the Scheme is assumed to be 2088, reflecting a 60-year operation period, however it is possible that the Scheme will be operational for a longer period of time. At the end of its operating life, the most likely scenario is that the Scheme would be shut down and all

infrastructure removed. It can be expected that employment will be generated to carry out the removal of the infrastructure from the Site.

12.10.25 The estimated duration of the decommissioning period is expected to take between 24 and 48 months, similar to that of the construction period of 36 months. Therefore, the likely effects will be of a medium-term temporary nature. Although these jobs are temporary, they represent a positive economic effect for a substantial period that can be estimated as the function of the scale and type of activities required to decommission the Site.

12.10.26 It is assumed based on the activities taking place that the same number of jobs required for constructing the Scheme will be needed to carry out the activities required to remove the infrastructure from the Site. Therefore, it is anticipated that an average of up to 323 gross Full-time employment (FTE) jobs may be on-site per day during this decommissioning period.

Net Decommissioning Employment

12.10.27 Table 12-27 presents the temporary decommissioning employment generated by the Scheme, accounting for leakage, displacement and multiplier effects as identified in the above section of the construction period. The Scheme will support, on average, 363 total net jobs per annum during the decommissioning period. Of these, 207 jobs per annum will be expected to be taken-up by residents within the Study Area, whilst 156 jobs will likely be taken-up by workers living outside the area.

Table 12-27 Net Additional Decommissioning Employment per annum from the Scheme

	Study Area (60-minute travel area)	Outside Study Area	Total
Gross Direct Employment	184	139	323
Displacement	-46	-35	-81
Net Direct Employment	138	104	242
Indirect & Induced Employment	69	52	121
Total Net Employment[9]	207	156	363

Source: AECOM Calculations 2022. Note that figures have been rounded to nearest whole number.

12.10.28 The direct, indirect and induced employment, expenditure and upskilling created from the decommissioning of the Scheme must be judged in the context of the labour pool of construction workers in the study area. The study area (60-minute drive time radius) currently has around 106,000 workers in its construction sector. The impact of decommissioning employment generation in the local economy has been assessed as temporary medium beneficial, which results in a medium-term temporary **minor beneficial effect**. This is **not considered significant**.

[9] Sum of Net Direct Employment and Indirect & Induced Employment

Employment loss following Decommissioning (permanent long-term)

12.10.29 It can be expected that if the Scheme is shut down and all infrastructure is removed, the employment required to carry out maintenance activities (14 jobs) will no longer be generated at this point. These workers can be expected to be integrated into the economy and find new employment after the loss of their job at the Scheme. As the Scheme is assumed to revert back to agriculture land after decommissioning, it is likely that the existing 2 jobs related to agriculture activities would be generated again.

12.10.30 The impact of employment loss in the local economy during the decommissioning phase during the long-term has been assessed as permanent very low adverse. This results in a permanent **negligible** effect, which is **not considered significant**.

Public Rights of Way

12.10.31 Changes to journey times, local travel patterns, and certainty of routes for users would arise from the temporary diversions of PRoW. Effects during decommissioning on relevant routes are set out in the following paragraph. There is one PRoW within the Solar and Energy Storage Park, and six PRoW within the Grid Connection Corridor. As stated in **ES Volume 1, Chapter 2: The Scheme [EN010131/APP/3.1]**, in a worst-case scenario, the Grid Connection Infrastructure will require removal of cables from manholes and vehicles accessing the Site to retrieve them. No open excavation or ground disturbance is likely.

12.10.32 Due to the limited scale of impacts upon PRoW, these effects are assessed to be low adverse, which results in a **minor adverse** effect. This is **not considered significant**.

Agricultural Land

12.10.33 Prior to the commencement of decommissioning, an assessment will be made of the land and soil, and a programme of remedial action will be agreed and during decommissioning undertaken to return land to arable agricultural use. A programme may include subsoiling and installation of a field drainage scheme. An increase in soil organic matter content may occur during the lifetime of the Solar and Energy Storage Park. It is therefore expected that the land will be in the same or better condition than it is currently as a result of the expected natural enhancement through approximately 60 years of being set-aside, however this is likely to be temporary and subject to good agricultural land management practices being adopted after decommissioning. As noted in **ES Volume 1, Chapter 8: Ecology and Nature Conservation [EN010131/APP/3.1]**, land used for the Scheme will be returned to arable agricultural use. Ground physical infrastructure will be removed and the Site returned to landowners in the condition as at the end of operation.

12.10.34 The Order limits will not be available for farming during decommissioning activities, while works are taking place on-site, leading to a temporary loss of use of the land. However, as long as it is safe to do so, the intention is for farming to be allowed in fields cleared of Solar PV and associated infrastructure while decommissioning activities occur in other fields. This loss of use may therefore only be a few weeks or months duration in each field.

12.10.35 Overall, given the short time frame of any disruption to farming activities during decommissioning and the return of the Site to solely farming practices following completion of decommissioning, the magnitude of change during the decommissioning phase is considered to be low and the significance of effect therefore **not significant**. This impact ends following completion of the decommissioning activities when the land is returned to farming use.

Local Amenities and Land Use

12.10.36 There is potential for noise, traffic, air quality, and visual effects arising from operation of the Scheme to impact on the amenity of residents, businesses and users of community facilities.

12.10.37 Taking into account the residual effect assessment results of the noise, air quality, visual and transport assessments, there are no receptors that would likely experience a significant effect on their amenity during decommissioning. Therefore, there are no effects arising from the Scheme on local amenities which results in **no effect**.

Summary of Effects

12.10.38 There are no significant effects expected during the decommissioning phase of the Scheme. Please see **ES Volume 3: Appendix 12-B** for a summary of non-significant effects **[EN010131/APP/3.3]**.

12.11 Enhancement Measures

12.11.1 Enhancement measures, beyond those outlined in Section 12.9 as embedded and additional mitigation, which would have a further beneficial outcome are presented below.

- During the construction phase, an **Outline Skills, Supply Chain and Employment Plan ('OSSCEP') [EN010131/APP/7.7]** will be implemented. The purpose of this is to promote employment and training opportunities associated with the construction and operation of the Scheme. The implementation of this Plan will help to maximise the positive gain for the local economy from the beneficial effect arising from employment generation.
- The OSSCEP also analyses community benefits regarding skills training, with a proposal to investigate the potential for a programme of activities which promote STEM education and careers. Given the Scheme's timescale and phases, some of these target individuals could ultimately become part of the Scheme's workforce, presenting legacy opportunities also.

12.12 Residual Effects and Conclusions

12.12.1 Significant residual effects on socio-economic and land use receptors following implementation of mitigation are defined as moderate or major adverse or beneficial.

12.12.2 There are no significant residual effects in the construction, operational or decommissioning phases of the Scheme. Non-significant effects are listed in **ES Volume 3: Appendix 12-B [EN010131/APP/3.3]**.

12.13 Cumulative Effects

Introduction

12.13.1 This section presents an assessment of cumulative effects between the Scheme and other proposed and committed plans and projects including other developments.

Cumulative Assessment Methodology

12.13.2 This assessment has been made with reference to the methodology and guidance set out in **ES Volume 1 Chapter 5: EIA Methodology [EN010131/APP/3.1]** and shortlist of cumulative schemes identified in **ES Volume 3: Appendix 16-A [EN010131/APP/3.3]**.

12.13.3 This cumulative effect assessment identified for each receptor those areas where the predicted effects of the Scheme could interact with effects arising from other plans and, or projects on the same receptor based on a spatial and, or temporal basis.

Potential Cumulative Effects

Solar and Energy Park

Construction and Decommissioning

Employment

12.13.4 In combination to employment impacts identified in this assessment, all cumulative schemes will generate additional construction related employment either in the Study Area or in the surrounding areas to the Study Area if they were to go ahead. For most of the developments, the scale of the construction and decommissioning employment generated cannot be readily quantified based on the information available for each scheme as this information is commercially sensitive and not available. However, West Burton Solar Project information available through their PEI Reports states that and Cottam Solar Project (both located within 5km of the Proposed Development) expect to commence construction in Q1 2024 until Q4 2025. This would create an overlap in construction with the Scheme for approximately 12 months in 2025.

12.13.5 The combined effect of the construction of the cumulative developments is likely to bring considerable additional employment to the Study Area. Although this is expected to result in an increase in construction and decommissioning employment, the overall cumulative effect from the generation of workers is likely to remain as temporary medium beneficial effect on the Study Area economy, resulting in a temporary **minor beneficial** effect which is **not considered significant**.

Temporary Accommodation

12.13.6 Given the scale of the employment associated with the construction of the cumulative developments, an assessment has been undertaken to confirm whether there is likely to still be surplus capacity within the hotel, bed and breakfast, and inns accommodation sector within a 60-minute drive time. For the purposes of this assessment, an assumption has been made to estimate the peak construction employment for West Burton 2 and 3, and Cottam 1 (the developments located within the zone of influence of the Proposed Development). This assumption has been calculated based on comparisons of land take area and peak construction employment for Gate Burton Solar and Energy Farm. Therefore, it is assumed that West Burton 2 and 3 together will have a peak construction workforce of 654 FTE and Cottam 1 will have a peak construction workforce of 832 FTE.

12.13.7 This could potentially increase the demand for bedspace within a 60-minute travel area if the construction phases are to overlap as planned. In a worst-case scenario where the construction phases overlap for 12 months, this could create a peak of 1,886 workers across the three developments. In this scenario, there would typically be 448 remaining rooms at minimum available after taking into account the peak construction workforce and typical seasonal occupancy levels. Therefore, 100% of the peak construction workers could be accommodated and there would still be **no effect** on the integrity of the hotel, bed and breakfast, and inns accommodation sector arising from the Scheme. It can also be noted that this analysis only takes into consideration the hotel, bed and breakfast and inns accommodation sector when alternative accommodations (such as Airbnb, serviced apartments, etc.) exist that could be considered to cater for the demand and therefore mitigate further any impact of accommodation demand.

GVA

12.13.8 The overall cumulative effect from the generation of GVA from construction is likely to remain temporary low beneficial on the economy of the Study Area, resulting in a temporary **minor beneficial** effect, which is **not considered significant**.

PRoW

12.13.9 The overall cumulative effect on PRoW during construction and decommissioning has the potential to have a greater effect due to the cumulative scheme of West Burton Solar Project adjacent to the Scheme. If constructed, West Burton 3 could intersect LL|Mton|68/1 (footpath – c.700m), south of the Site, on the north border of the Grid Connection Corridor, connecting the High Street to Stow Park Road. No other PRoW affected by West Burton or Cottam Solar Projects intersect the Order Limits of the Scheme. Therefore, it is expected that the effect will remain temporary **minor adverse**, **not considered significant.**

Agricultural Land

12.13.10 The effect on agricultural land associated with the Scheme is reversible in nature for the majority of the land and results in little or no loss of agricultural land or the soil resource, unlike built development. However, there is potential

for the developments at Little Crow Solar Park and Heckington Fen Solar Park to have a cumulative effect on BMV land. Along with Gate Burton Energy and Solar Park, these sites are located within the East Midlands region which contains 1.2 million ha of farmland (England as a whole has 9.2 million ha of farmland). In regard to BMV, the East Midlands contains 618,789 ha.

12.13.11 The site at Little Crow Solar Park contains 36.6 ha (16%) grade 3a land which is classified as BMV. In addition, at Heckington Fen Solar Park 211.7 ha (43%) of the site is grade 3a land or above. Together with BMV land likely to be lost during construction of Gate Burton Energy and Solar Park (153.2 ha), 401.5 ha BMV land is expected to be lost across the East Midlands as a result of the three developments. This translates into less than 0.1% of the total BMV land across the region.

12.13.12 Whilst it is not possible to quantify the use of BMV land for every planned solar park in the region, analysis of Little Crow Solar Park and Heckington Fen Solar Park signify that the effect on agricultural land, including BMV, across the region is likely to remain minimal. Therefore, the cumulative effect on agricultural land associated with the Scheme remains **minor adverse**, which is **not considered significant**.

Residential Properties, Business Premises, and Community Facilities

12.13.13 No plans or projects identified in **ES Volume 3: Appendix 16-A [EN010131/APP/3.3]** are considered in combination to impact important residential properties, business premises and community facilities features identified in this assessment. Other schemes are not likely to contribute to the effects on this receptor and therefore the impact is expected to remain as **no effect**.

Operation

Employment

12.13.14 If all the schemes are to be realised there will be considerable additional employment from some of the cumulative schemes. Most cumulative schemes, however, will not generate considerable operational employment due to their nature as infrastructure or as purely residentially led development projects. Therefore, the overall combined cumulative effect from the generation of workers during operation is likely to remain permanent very low beneficial, resulting in a permanent **negligible** effect which is **not considered significant**.

PRoW

12.13.15 No PRoW that intersect the Order limits of the Scheme are expected to be affected during the operation of adjacent schemes of West Burton and Cottam Solar Projects. Therefore, it is expected that there will be a permanent **negligible** effect, which is **not considered significant**.

Residential Properties, Business Premises, and Community Facilities

12.13.16 No plans or projects identified in **ES Volume 3: Appendix 16-A** of this ES **[EN010131/APP/3.3]** are considered in combination to impact important

residential properties, business premises and community facilities features identified in this assessment. Other schemes are not likely to contribute to the effects on this receptor and therefore the impact is expected to remain as **no effect**.

Shared Grid Connection Corridor

12.13.17 The Grid Connection Corridor has the potential to be shared with Cottam and West Burton solar projects as detailed in **ES Volume 1, Chapter 2: The Scheme [EN010118/APP/3.1].** Under Scenario 1, all three projects' ducts and cables are installed within a same construction programme of between 24 – 36 months. Under Scenario 2, there would be a sequenced installation of all three projects' ducts and cables over a maximum 5-year construction period.

Scenario 1

12.13.18 In the event of Scenario 1, where all three projects' ducts and cables are installed within a 24-36 month period, it is possible that the magnitude of some effects could increase due to three lots of separate cable-pulling activities taking place at the same time.

12.13.19 It is expected that employment and GVA generation assessed in Section 12.8 could increase due to the cumulative effect of the Scenario. Therefore, it is possible that there could be a temporary medium beneficial effect, resulting in a **minor beneficial** effect, not considered significant.

Scenario 2

12.13.20 Under Scenario 2, where the construction of the ducts and cables of the Grid Connection Corridor will be sequenced over a 5-year period, the duration of effects would be extended, and the magnitude of change could also differ.

12.13.21 For employment and GVA, it is likely that the impact would remain the same but be felt over a longer period and therefore be of lower magnitude. Therefore, it is expected that there will be a temporary very low beneficial effect, resulting in a **negligible** effect which is not significant.

12.13.22 However, the impact on PRoW could worsen if it was extended over a longer period. However, the overall cumulative effect of Scenario 2 remains temporary low adverse, resulting in a **minor adverse** effect, not considered significant.

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