SUNNICA ENERGY FARM

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Volume 6

Environmental Statement

6.1 Chapter 12: Socio-Economics and Land Use

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Sunnica Energy Farm

Environmental Statement
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 ES presents the findings of an assessment of the likely significant effects on socio-economics, land use and the farm businesses as a result of the Scheme. For more details about the Scheme, refer to **Chapter 3: Scheme Description** of this Environmental Statement **[EN010106/APP/6.1]**.

12.1.2 This chapter identifies and proposes measures to address the potential impacts and effects of the Scheme on socio-economics and land use during construction, operation (including maintenance), and decommissioning.

12.1.3 This chapter is supported by the following figures provided in Volume 3 of this Environmental Statement **[EN010106/APP/6.3]**:

a. Figure 12-1: Drive Time to/from the Order Limits
b. Figure 12-2: Agricultural Land Classification Sunnica East Sites A and B
c. Figure 12-3: Agricultural Land Classification Sunnica West Sites A and B
d. Figure 12-4: Existing Public Rights of Way
e. Figure 12-5: Public Rights of Way Affected During Construction
f. Figure 12-6: Public Rights of Way Post-Construction

12.2 Legislation and Planning Policy

12.2.1 **Appendix 12A** of this Environmental Statement **[EN010106/APP/6.2]** identifies the legislation, policy, and guidance of relevance to the assessment of significant socio-economic and land use effects of the Scheme.

12.3 Assessment Assumptions and Limitations

12.3.1 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.

12.3.2 Baseline conditions reported in Section 12.6 regarding population, labour force and the local economy are based on latest data available at the time of writing. It is likely that current conditions have 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 12.8 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.

12.3.3 As it was not possible to confirm at PEI Report stage with certainty the length of time each PRoW would be closed for, as a worst-case scenario, it was assumed that the PRoW lying within the Order limits would be closed for the entire length of the construction period. This information is now known and assessed within this chapter. All temporary PRoW closures will be avoided as far as possible including along the cable route; however, as a worst case scenario it is assumed that each PRoW will be closed for up to three weeks during the construction phase.

12.3.4 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, noise and vibration, visual, and air quality assessments.

12.3.5 The agriculture and soils assessment was not conducted at PEI Report stage. Effects related to agriculture and soils have been assessed at this ES stage. The Soils and Agriculture Baseline Report is included in **Appendix 12B** of this Environmental Statement **[EN010106/APP/6.2]** and the assessment on soils and agriculture is included within this chapter.

12.3.6 The assessment of the construction phase impacts has been based on a 24 month construction programme as outlined in **Chapter 5: EIA Methodology** of this Environmental Statement **[EN010106/APP/6.1]**. It is noted that the construction duration may extend beyond the 24 month or be phased. However, the impacts described in this chapter are considered to be a reasonable worst case and would be the same or lesser in terms of effects if the construction programme was extended or phased, as is described in detail in Chapter 5.

12.4 Assessment Methodology

Introduction

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

12.4.2 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.

12.4.3 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:

a. Agricultural land, soils and farm businesses;

b. Employment generation;

c. Gross value added (GVA)[1];

d. PRoW; and

e. Local amenities and land use (residential properties, business properties, community facilities and development land).

12.4.4 The agricultural assessment does not consider food security at a national, regional or local level. This is because land use planning does not control how agricultural land is managed, for example the growing of non-food energy crops. Food security is managed through national policy on agricultural support and trade and is insensitive to land use planning decisions.

12.4.5 The effects are assessed as relevant for all four sites, which are Sunnica East Site A, Sunnica East Site B, Sunnica West Site A, and Sunnica West Site B. Effects arising from the two cable route corridors Grid Connection Route A and Grid Connection Route B, and Burwell National Grid Substation Extension are also assessed. The two options of the Burwell National Grid Substation Extension (Option 1, to the east of the existing substation, and Option 2, to the north of existing substation) are not anticipated to have any difference on the socio-economic impact of the scheme.

12.4.6 Further details on the methodology for the socio-economics and land use assessment of the Scheme are detailed below.

Study Area

12.4.7 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 12-1).

12.4.8 The Scheme comprises four sites (the Sites), two cable route corridors (Grid Connection Route A and Grid Connection Route B) and one national grid substation (Burwell National Grid Substation Extension), as explained in **Chapter 3: Scheme Description** of this Environmental Statement **[EN010106/APP/6.1]**.

12.4.9 Sunnica East Site A is located south of Isleham straddling the East Cambridgeshire District Council (ECDC) and West Suffolk Council (WSC) administrative boundaries. Sunnica East Site B is located south of Worlington in WCS. Sunnica West Site A and B are located south and west of Chippenham, respectively, within ECDC. The cable route corridor for Grid Connection Route A is located between Sunnica East Site A, Sunnica East Site B, Sunnica West Site A, and Grid Connection Route B is located

[1] Gross Value Added (GVA) is the measure of the value of goods and services produced in an area, industry or sector of an economy.

between Sunnica West Site A, Sunnica West Site B and Burwell National Grid Substation Extension (See Figure 3-20).

12.4.10 The potential economic impacts arising from the Scheme (i.e. employment and GVA generation) are considered relative to a 45 minute travel study area (based on driving), as illustrated in Figure 12-1, as this represents the principal labour market catchment area for the Scheme, particularly given the absence of a functional economic market area within local policy. After consultation with the local authorities, it was agreed that a 45 minute travel study area incorporates the population that may reasonably be expected to travel to, and benefit from economic impacts arising from the Scheme and constitutes the relevant labour market for the Scheme.

12.4.11 For consideration of effects on agricultural land and soils, the boundary of the Sites has been considered. Neither Grid Connection Route A and Grid Connection Route B are considered as part of this assessment since the impacts on land from the cable routes are not expected to have long lasting effects on the quality of the land (because it will be available for arable farming following completion of the construction phase).

12.4.12 Unlike the cable route, Burwell National Grid Substation Extension would result in loss of agricultural land resource and disturbance of the soil associated with it. The land take required for Burwell National Grid Substation Extension would constitute a small area of land (less than 1ha). A detailed ALC survey places points at 100m intersections of the Ordnance Survey grid, so the ability to resolve the baseline at a small site such as this is limited. Therefore, in advance of the post-consent soil investigation for the CEMP, a worst case scenario is assumed that the agricultural land for both Options 1 and 2 is Best and Most Versatile (BMV). Please see section 12.4.37 for further details on BMV land.

12.4.13 The Burwell National Grid Substation Extension (which constitutes only a small area of land take) would be subject to soil surveys as part of the Soil Management Plan (SMP) (see Section 12.7 for further details), which will be produced at the detailed design stage and secured through the Construction Environmental Management Plan (CEMP) and Decommissioning Environmental Management Plan (DEMP). A Framework CEMP and Framework DEMP have been produced and are provided in **Appendix 16C** and **Appendix 16E** respectively of this Environmental Statement **[EN010106/APP/6.2]**.

12.4.14 The assessment of effects on users of PRoW considers those resources likely to be affected by closures and diversions of routes. The study area is therefore all PRoW located in or within 500m of the Order limits.

12.4.15 The principal impacts on local amenities will be considered on a geographical scale based on the findings of other assessments such as those presented in **Chapter 10: Landscape and Visual Amenity, Chapter 11: Noise and Vibration, Chapter 13: Transport and Access** and **Chapter 14: Air Quality** of this Environmental Statement **[EN010106/APP/6.1]**.

12.4.16 **Table 12-1** presents the different components of the socio-economic 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)	45 minute travel study area	Professional judgement and experience from other schemes in southern England. Consultation with local authorities agreed 45 min is the average commute for the local area.
GVA during construction phase		
PRoW	The Order limits and the immediately adjacent land within 500m.	Professional judgement and experience from other schemes in southern England
Agriculture	The Sites.	
Local amenities - Residential Properties	500m radius from the Order limits has been used.	
Local amenities - Business Premises	500m radius from the Order limits has been used.	
Local amenities- Community Facilities	2km radius from the Order limits has been used.	
Development land	The Order limits and the immediately adjacent land.	

Sources of Information

Desktop Research for socio-economics

12.4.17 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 Order limits and in the surrounding area.

12.4.18 Baseline data illustrating the existing conditions surrounding the Order limits has been collected through a desk-based research exercise using publicly available sources, documents and web-based applications. These sources include:

a. Mid-Year Population Estimates (Ref 12-2);
b. Annual Population Survey (Ref 12-3);
c. Indices of Multiple Deprivation (Ref 12-4); and
d. Business Register and Employment Survey (Ref 12-5).

Desktop Research for Agricultural Land

12.4.19 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 12-6). A Provisional ALC is available from the Defra mapping service magic.defra.gov.uk (Ref 12-7). 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 assessment has been undertaken rather than relying on the provisional ALC.

12.4.20 The magic.defra.gov.uk mapping service also shows a detailed site survey of agricultural land quality within the Order limits. This area of land is shown edged purple on the plan at Figures 12-2 and 12-3. The survey is included in **Annex B: MAFF Proof of Evidence** in **Appendix 12B** of this Environmental Statement **[EN010106/APP/6.2]**. This work was undertaken by the former Ministry of Agriculture, Fisheries and Food (MAFF) and is now held by Natural England.

12.4.21 As detailed in **Appendix 12B** of this Environmental Statement **[EN010106/APP/6.2]**, the MAFF survey work lowered the drought limitation for the land by a single grade (for example, changing ALC Grade 3a land to Grade 2) to allow for the availability of irrigation where it is present. However, this practice was subsequently discontinued and Natural England consider it appropriate to revert to the grade imposed by the soil droughtiness limitation. Please refer to the correspondence in **Annex C: Natural England Correspondence on ALC Methodology** within **Appendix 12B** of this Environmental Statement **[EN010106/APP/6.2]**. All of the MAFF surveyed land within the Order limits was limited to grade by drought and had the ALC grade adjusted to account for irrigation. The grade shown in this ES for the area of land surveyed by MAFF has therefore been corrected one grade lower than that shown on magic.defra.gov.uk, so that it is compliant with current guidance.

12.4.22 An additional small area of existing ALC survey in the public domain was carried out by Reading Agricultural Consultants (RAC) for the now consented Worlington Quarry site. This area of land is shown edged pink on the plan at Figure 12-2. The survey is provided in **Annex A: RAC Survey** of **Appendix 12B: Soils and Agricultural Baseline Report** in the Environmental Statement **[EN010106/APP/6.2]**. The marginal area of the minerals site survey that sits within the Order limits was not included in the eventual minerals extraction work so has not been disturbed.

Soil Surveys

12.4.23 On land not surveyed by MAFF or RAC, agricultural land within the Order limits was subject to a detailed ALC assessment by Baird Soil. This area of land is shown edged blue on the plans at Figure 12-2 and Figure 12-3. The

field data on soils collected for the ALC assessment also provides the soil resources baseline for the Order limits. Field data for the MAFF and RAC ALC surveys have also been reviewed for the soil resources baseline, and a transect across the three grades in the MAFF area was made to confirm drought being the primary limiting factor.

Farm Circumstances Surveys

12.4.24 Baseline data for assessing the farming circumstances of the six agricultural businesses occupying land within the Order limits was gathered using interviews and questionnaires in 2020. This information was supplemented by the assessor's own observations on site while carrying out the ALC field work.

12.4.25 Separate questionnaires were sent to landowners of agricultural land on the proposed cable route in 2020. The farming circumstances baseline data collection sought to establish the nature and size of the agricultural enterprises for each farm business including significant interactions between these and those of other farms. The number of returns were however limited; only two were received for land in agricultural production along the cable route. Other returns were for non-commercial equestrian and an outdoor activity park.

Impact Assessment Methodology

12.4.26 The socio-economic and land use assessment follows the general Impact Assessment Methodology set out in **Chapter 5: EIA Methodology** of this Environmental Statement **[EN010106/APP/6.1]**. However, the specific methodology, impact magnitude and impact sensitivity criteria for this assessment have been set out below.

Methodology for determining demolition and construction effects, operational effects and decommissioning effects

12.4.27 As mentioned previously, the economic impact of the Scheme is considered relative to a 45 minute travel study area, as this is the principal labour market catchment area.

12.4.28 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 Guidance (Ref 12-1).

12.4.29 **Table 12-2** below outlines the values that have been allocated to the construction, operation, 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)	12%	The analysis of Census 2011 data indicates that approximately 12% of workers in the study area live outside the study area (Ref 12-8). This corresponds to approximately the low leakage rate as set out by HCA Additionality Guide (Ref 12-1) and implies that a reasonably high proportion of benefits will be retained within the study 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 Guidance (Ref 12-1).
Multiplier (further economic activity associated with the additional local income, supplier purchase and longer term development effects)	2.33	The multiplier is a composite figure which takes into account both the indirect jobs created across the Functional Economic Market Area (FEMA) based on supply chain activity but also the induced employment created through increased spending across the study area. In the solar powered growth in the UK report, the Centre for Economics and Business Research (CEBR) (Ref 12-9) give an employment multiplier for large-scale solar PV investments of 2.33 – i.e. for every job supported on-site, 1.33 indirect/induced jobs are supported in the wider economy.

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

12.4.31 The principal social impacts on residential properties, business premises and community facilities have been informed by other assessments and assessed against the significance criteria using these assessments and professional judgement.

Significance criteria

12.4.32 The assessment of potential socio-economic and land use effects uses the effect significance terms and definitions described within **Chapter 5: EIA Methodology** of this Environmental Statement **[EN010106/APP/6.1]**. Where possible, socio-economic and land use impacts have been appraised against relevant national standards, such as those provided by Department for Business, Energy & Industrial Strategy (BEIS) 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.

12.4.33 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:

a. **Beneficial** classifications of significance indicate an advantageous or beneficial effect on an area, which may be minor, moderate, or major in effect;

b. **Negligible** classifications of significance indicate imperceptible effects on an area;

c. **Adverse** classifications of significance indicate a disadvantageous or adverse effect on an area, which may be minor, moderate or major in effect; and

d. **No effect** classifications of significance indicate that there are no effects on an area.

12.4.34 Duration of effect is also considered, with more weight given to permanent changes than to temporary ones. Permanent effects are generally those associated with the completed Scheme. Temporary effects are those associated with the construction works. For the purposes of this assessment, short-term effects are of one year or less, medium-term effects of one to five years and long-term effects for over five years.

12.4.35 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 the expert judgment and professional experience of the author, and relies on the following considerations:

a. **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);

b. **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

c. **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.

12.4.36 Criteria for receptor sensitivity and impact magnitude have been set out below in **Table 12-3** to **Table 12-14** (although specific sensitivity values are not attributed to socio-economic receptors as explained above), which have been grouped as follows: economic impacts, local amenities, land use impacts, PRoW, agricultural land, soils and farming circumstances. The significance of effect matrix has been provided following the receptor sensitivity and impact magnitude criteria in **Table 12-15**.

Agriculture land and soils

12.4.37 This section outlines the criteria that have been set to assess the effects on agricultural land and soils receptors. 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 12-6) land in ALC Grades 1, 2 and 3a is considered to be the nation's best and most versatile land. Paragraph 174 of the NPPF 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.

12.4.38 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.

12.4.39 Land has a soil resource associated with it. This soil has a functional capacity that can be degraded or lost (for instance contamination of soil) in addition to the potential for loss of the soil material itself. Some functions of soil, such as the preservation of cultural artefacts and the support of biodiverse habitats, are covered elsewhere in this ES, for example **Chapter 7: Cultural Heritage** and **Chapter 8: Ecology and Nature Conservation** of this Environmental Statement **[EN010106/APP/6.1].** For this chapter, the functional capacity of the soil for agricultural production is the primary issue.

12.4.40 Soil is for all practical intents and purposes a non-renewable resource. Therefore, the preservation and beneficial reuse of this resource is desirable in its own right.

12.4.41 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, with the area of 20 hectares (ha) referred to in **Table 12-3** below being derived from the threshold the former MAFF used for intervening in planning decisions, and maintained by Natural England when informing their consultation on projects..

12.4.42 The sensitivity of soil material varies in relation to the stress and its physical characteristics, for instance high clay content increases the vulnerability of soil to structural damage while in a wet and plastic consistency. Low clay content can increase the vulnerability of exposed soil material to erosion from rainfall. Topsoil is typically of greater sensitivity than subsoil as it is more limited in extent and the higher organic matter content can fuel a rapid transition to anaerobic conditions.

12.4.43 **Table 12-3** and **Table 12-4** set out magnitude of impact criteria for the agricultural land resource, and soil resources, as used in this assessment. These magnitude criteria are examples and not absolute. They are qualified through professional judgement, for instance looking at the relative areas of

land quality grades affected and the ease of reverting to the previous agricultural land or use.

Table 12-3: Agriculture Land Resource magnitude criteria

Magnitude	Description
High	Loss of 20 hectares or more of BMV land (Adverse).
Medium	Loss of less than 20 hectares BMV land (Adverse).
Low	Loss of agricultural land with no BMV i.e. Grade 3b (Adverse).
Very low	Loss of land in Grades 4 and 5.

Table 12-4: Soil Resources magnitude criteria

Magnitude	Description
High	Disposal of topsoil or loss of productive functional capacity e.g. land contamination (Adverse).
Medium	Loss of topsoil for agricultural production but retained for beneficial reuse, or degradation of productive capacity (Adverse).
Low	Loss of subsoil for agricultural production but retained for beneficial reuse (Adverse).
Very low	Marginal loss of soil material such as light erosion from construction easement (Adverse).

12.4.44 **Table 12-5** and **Table 12-6** illustrate the sensitivity scales for assessment of agricultural land and soil resources. The Effects Significance Matrix is included in **Table 12-15**.

Table 12-5: Agricultural Land Resource sensitivity criteria

Sensitivity	Description
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

Table 12-6: Soil Resources sensitivity criteria

Sensitivity	Description
High	Disturbing heavy textured soil in plastic condition

Sensitivity	Description
Medium	Disturbing medium textured soil in plastic condition
Low	Disturbing medium textured soil in friable condition
Very low	Disturbing light textured soil in friable condition

Farming Circumstances

12.1.1 **Table 12-7** sets out the magnitude of impact criteria for the farming circumstances, as used in this assessment. As for land and soil resources, these are illustrative examples and not absolute or exhaustive. They can also be qualified through professional judgement.

Table 12-7 Farming circumstances magnitude criteria

Magnitude of change	Criteria
High	Termination of a farm business (Adverse) Creation/expansion of primary farm enterprise (Beneficial)
Medium	Termination of a farm enterprise (Adverse) Creation/expansion of a farm enterprise (Beneficial)
Low	Constraint of a farm enterprise (Adverse) Enhancement of existing farm enterprise (Beneficial)
Very Low	Minor interruption to farm enterprise planning (Adverse) Temporary enhancement of existing farm enterprise (Beneficial)

12.1.2 **Table 12-8** identifies the sensitivity criteria that have been used to inform the assessment on farming circumstances.

Table 12-8 Farming circumstances sensitivity criteria

Sensitive / Value of receptor	Example Criteria
High	Breeding livestock and stock with biosecurity restrictions
Medium	High value vegetable and fruit crops.
Low	Dairy requiring daily collection of perishable milk.
Very Low	Housed livestock

Economic impacts

12.4.45 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.

12.4.46 **Table 12-9** 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 12-9: 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.

12.4.47 **Table 12-10** identifies the magnitude of impact criteria which have been used to assess the socio-economic receptors relating to employment and GVA.

Table 12-10: Economic impact magnitude criteria

Magnitude	Description
High	An impact that is expected to have considerable adverse or beneficial socio-economic 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

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

12.4.49 **Table 12-11** 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 12-11: 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.
Medium	PRoW is of medium importance with good 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 low importance with alternative routes available. Or PRoW is of very low importance with good 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.

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

Table 12-12: 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.

Magnitude	Description
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.

Local amenities and land use - Local amenities and development land

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

12.4.52 **Table 12-13** 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 in **Table 12-14** have been used to establish the significance of the identified effects.

Table 12-13: Local amenities impact sensitivity criteria

Sensitivity	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.

12.4.53 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 12-14** identifies the magnitude of impact criteria which have been used to assess the impacts on local amenities and land use.

Table 12-14: Local amenities impact 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.

Magnitude	Description
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.

Significance of effects

12.4.54 Socio-economic and land use effects are a reflection of the relationship between the sensitivity of the affected receptor (**Table 12-5**, **Table 12-9**, **Table 12-10**, **Table 12-11** and **Table 12-13**) and the magnitude of the impact. **Table 12-15** below shows how the assessment of the significance of effects is arrived upon.

Table 12-15: 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

12.4.55 In accordance with the methodology set out within **Chapter 5: EIA Methodology** of this Environmental Statement **[EN010106/APP/6.1]**, the following criteria is applied:

a. ‘Moderate’ or ‘major’ are classed as ‘**significant**’;

b. ‘Minor’ are classed as ‘**not significant**’, although they may be a matter of local concern; and

c. ‘Negligible’ effects are classed as ‘**not significant**’.

12.5 Stakeholder Engagement

12.5.1 The Sunnica Energy Farm Scoping Report outlined the assessment methodology, relevant legislation and policy, defined study areas and identified baseline conditions pertaining to the scope of the socio-economics and land use assessment. The Scoping Report and the Scoping Opinion are included within **Appendices 1A** and **1B** respectively of this Environmental Statement **[EN010106/APP/6.1]**.

12.5.2 Consultation undertaken to date in relation to socio-economics and land use is outlined in the Consultation Report **[EN010106/APP/5.1]** submitted

with the DCO Application. **Table 12-16** outlines the matters raised within the Scoping Opinion relevant to socio-economic and land use and how these have been addressed through the ES.

Table 12-16: Main matters raised within the Scoping Opinion

Consultee	Main matter raised	How has the concern been addressed	Location of response in chapter
Planning Inspectorate	Ensure the Study Area for each potential impact for socio-economics and land use are identified clearly.	The Study Area for each potential impact has been identified.	See Section 12.4 and **Table 12-1**
Planning Inspectorate	Ensure guidance used in the methodology is explicitly referenced and how socio-economic receptors will be assessed.	The Methodology identifies the guidance the assessment has been based on.	See Section 12.4
Planning Inspectorate	Ensure the potential impacts for the operations of Worlington Quarry are assessed. Including the relationship between the Proposed Development and Worlington Quarry.	The impacts of Worlington Quarry have been scoped out of this assessment on the basis of the operational quarry is no longer within the boundaries of the Scheme. Area 5 of Worlington Quarry which is the only area within the Order limits has been confirmed by Frimstone (the Operator) to be barren for sand and gravel extraction. Therefore, there are no potential impacts on current or future operational activity in the Worlington Quarry affected by the Scheme. Where the Worlington Quarry planning permission overlaps with the DCO order limits, it has been disapplied to ensure that the Proposed Development does not conflict with the restoration scheme for the quarry.	N/A
NHS West Suffolk Clinical Commissioning Group	The possible impacts on healthcare services arising from employment generated during the construction	The impact on primary healthcare facilities have been considered in **Chapter 15: Human Health** of this Environmental Statement **[EN010106/APP/6.1]**.	See **Chapter 15: Human Health** of this Environmental Statement

Consultee	Main matter raised	How has the concern been addressed	Location of response in chapter
	period should be assessed.		**[EN010106/APP/6.1]**.
SCC and WSC	The Scheme lies within Minerals Consultation Area which should be given due consideration in the assessment.	The Order limits lie within the Worlington Quarry and Barton Mills Chalk quarry safeguarding zones identified in the Suffolk Minerals and Waste Local Plan July 2020. Mineral deposits within Minerals Safeguarding Areas will not be permanently sterilised by the Scheme and can be extracted, if required, after its decommissioning. It is considered that this satisfies the requirements of the Cambridgeshire and Suffolk Mineral Safeguarding policies.	N/A
SCC and WSC	Ensure the non-irreversible nature of the proposed development is considered to safeguard existing minerals and waste developments and potential future areas of extraction including those which might offer further potential extensions in the foreseeable future to the existing quarry.		
Natural England	Wish to see a Detailed ALC Assessment for the Solar Site	A detailed ALC assessment has been undertaken and presented within this Chapter.	See Section 12.8 of this Chapter
Natural England	Wish to see consideration of how soils will be disturbed/harmed by development	A detailed ALC assessment has been undertaken and presented within this Chapter.	See Section 12.8 of this Chapter
Cambridgeshire CC	Impact of development on Food Security	The agricultural assessment does not consider food security at a national, regional or local level. This is because land use planning does not control how agricultural land is managed, for example the growing of non-food energy crops. Food security is managed through national policy on agricultural support and trade and is insensitive to land use planning decisions.	Food security has not been considered in this assessment for the justification provided in this row.

Table 12-17: Main matters raised during statutory consultation

Consultee	Main matter raised	How has the concern been addressed	Location of response in chapter
Landowners, Local Authorities S42 consultees, S47 consultees	Concern over the perceived lack of benefits for local residents	Positive impacts of the Scheme (including job creation, creation of permissive paths) and included in the assessment of likely impact and effects. The benefits of the Scheme are also set out in the, Outline Skills, Supply Chain and Employment Plan **[EN010106/APP/7.8]**	See Section 12.8 of this Chapter – Assessment of Likely Impacts and Effects
Landowners, S47 consultees	Impact on neighbouring forthcoming developments	The impact of forthcoming developments has been included in the cumulative impact section of this chapter.	See Section 12.11 – Cumulative Effects
Landowners, Local Authorities, S42 consultees, S47 consultees	Concern over impact on PRoW users	The impact on PRoW users is assessed in this chapter, both the impact of possible closures during construction and decommissioning, and the creation of new permissive routes during operation.	See Section 12.8 – Assessment of Likely Impacts and Effects
Local Authorities. S47 consultees	Possible loss of agricultural employment.	The possible loss of agricultural employment has also been taken into account as deadweight loss of employment during the operation phase.	See Section 12.8 – Assessment of Likely Impacts and Effects
Local Authorities	Concern over the study area initially used for the chapter	The geography was updated from the Travel to Work Area (TTWA) to a 45 minute travel time to site after discussions with the local authorities.	See Section 12.4 – Assessment Methodology
S47 consultees	Possible impact on residents (including visual impact of the Proposed Development)	The possible visual impacts on residents are considered in the assessment of likely impacts and effects. This section considers the respective assessments of the Landscape and Visual, and whether any significant impacts have been assessed. Any significant impacts on residents are then considered in the Socio-Economics chapter's combined effects on receptors section, where any significant impacts on the receptor are considered alongside any significant effects from the Noise and Vibration, Air Quality, and Transport and Access chapters.	Considered in Chapter 10 (Landscape and Visual) and Section 12.8 – Assessment of Likely Impacts and Effects, including 12.8.38 (Combined effects on Receptors)

Consultee	Main matter raised	How has the concern been addressed	Location of response in chapter
S47 consultees	Possible impact on local businesses (including visual impact of the Proposed Development)	The possible visual impacts on residents are considered in the assessment of likely impacts and effects. This section considers the respective assessments of the Landscape and Visual, and whether any significant impacts have been assessed. Any significant impacts on residents are then considered in the Socio-Economics chapter's combined effects on receptors section, where any significant impacts on the receptor are considered alongside any significant effects from the Noise and Vibration, Air Quality, and Transport and Access chapters.	Considered in Chapter 10 (Landscape and Visual) Also see Section 12.8
S42 and S47 consultees	Concern over impact of development on Food Security	The agricultural assessment does not consider food security at a national, regional or local level. This is because land use planning does not control how agricultural land is managed, for example the growing of non-food energy crops. Food security is managed through national policy on agricultural support and trade and is insensitive to land use planning decisions.	Food security has not been considered in this assessment for the justification provided in this row.
S42 and S47 consultees	Concern that the Scheme will remove areas of BMV land from agricultural production	The ALC grade of the land within the Sites has been identified and the effects of the Scheme assessed.	The baseline ALC survey results are presented in Section 12.6 of this Chapter and **Appendix 12B** of this Environmental Statement **[EN010106/APP/6.2].** The assessment of effects on agricultural land resource is provided in Section 12.8 of this Chapter.

12.6 Baseline Conditions

12.6.1 In order to assess the potential effects of the Scheme, the environmental conditions, resources and sensitive receptors that currently exist in the study area have been determined. These are known as baseline conditions and have been considered in the context of socio-economic impact assessment, including:

a. The existing Order limits and land use, including development land;
b. Agricultural Land Resource;
c. Soil Resource;
d. Population and labour force;
e. The local economy;
f. PRoW;
g. Residential Properties;
h. Business Premises; and
i. Community Facilities.

12.6.2 Potential effects arising from the Scheme are assessed relative to the baseline impact areas set out in **Table 12-1** and benchmarked against local, regional and national standards where appropriate. Therefore, baseline conditions have been provided for these areas.

Existing Baseline

Existing site within the Order limits and land use, including development land

12.6.3 Sunnica East Site A and Sunnica East Site B consists of agricultural land containing some ecological features, farm access tracks, footpaths and abutted by local transport roads. The operational areas of Worlington Quarry are located adjacent to the south-eastern area of the Sunnica East Site B accessed from Elms Road. Part of Sunnica East Site B lies within working area 5 of the extant 2004 planning permission for the quarry (application reference F/04/0227). This area was confirmed by the current operator to be barren of sand and gravel and has therefore not been worked and is currently in agricultural use. The quarry has been operational since planning permission was originally granted for mineral extraction in 2004, extracting sand and gravel and importing inert material for recycling and to utilise for the restoration of the site. The consent for quarry extraction expires on 30 October 2025, after which it will be restored in accordance with an approved restoration plan. Extension areas to the quarry are allocated in the Suffolk Minerals and Waste Local Plan adopted in July 2020 and these are adjacent to Sunnica East Site B.

12.6.4 Sunnica West Site A also consists of agricultural fields bound by trees, managed hedgerows, footpaths and farm access tracks. A Grade II Listed Building (Waterhall Farmhouse) is located on the southern side of the A11, separated from the Sunnica West Site A by the A11 to the west and Chippenham Road to the east.

12.6.5 Sunnica West Site B is located approximately 1.2km north west of Sunnica West Site A, separated by agricultural fields and Chippenham Road. Sunnica West Site A is in proximity to the industrial and commercial estates on Newmarket Road and Fordham Road. Sunnica West Site B consists of agricultural fields bound by trees and managed hedgerows.

12.6.6 Grid Connection Route A heading south from the Sunnica East Site A crosses agricultural land and the B1102 immediately north of Sunnica East Site B. The cable route then passes through Sunnica East Site B before running south, crossing the River Kennett and Havacre Meadows and Deal Nook County Wildlife Site (CWS). The cable route corridor then crosses the Chippenham footpath 49/7, before passing approximately 20m west of the Chippenham Gravel Pit CWS and crossing the B1085 before joining Sunnica West Site A.

12.6.7 Grid Connection Route B connects Sunnica West Site A with Sunnica West Site B, and Sunnica West Site B with the Burwell National Grid Substation Extension. It crosses agricultural fields and roads including the B1102 and A142. It also crosses several watercourses including the Burwell Lode, New River and the River Snail. It crosses land which has full and outline planning permission for a mix of B1, B8, A1, A3 and D2 use classes associated with an extension to a bioanalytical and pharmaceutical analysis centre at Fordham. Furthermore, this route crosses within the northern most part of an area of land allocated by Policy FRD 7 (Employment allocation, land north of Turners) for employment development (B1/B2/B8 uses) in the East Cambridgeshire Local Plan (2015) which also has planning permission (18/00579/ESF) granted for the construction of a frozen goods warehouse, replacement lorry park, Sustainable Urban Drainage System and a bund.

12.6.8 The two areas identified for the Burwell National Grid Substation Extension are currently agricultural fields. Both options are shown in Figure 3-20. The preferred location is within National Grid land ownership to the east of the existing substation, adjacent to Weirs Drove, approximately 200m west of Burwell. The alternative location is to the north of the existing substation approximately 350m from the village of Burwell.

12.6.9 The Order limits is within safeguarding zones and consultation areas for various proposed minerals and waste site allocations of the Suffolk Minerals and Waste Local Plan adopted in July 2020 and the emerging Peterborough and Cambridgeshire Minerals and Waste Local Plan 2019 and adopted policy, which are located close by but not within the Order limits.

Development Land

12.6.10 One potential development, for a potable water pipeline (for Anglian Water) (the Potable Water Pipeline), cuts across Grid Connection Route A, but the planning application has not yet been submitted. There are no other planning applications located within the Order limits. There are some planning applications directly adjacent to the Order limits or located close by, namely those adjacent to Sunnica West Site A (a bund for animal welfare), adjacent to Sunnica East Site B (commercial polyhouses), within 1km of the Sunnica East site (130 proposed dwellings; and a caravan park extension), and within 1km of Sunnica West Site B (proposed warehouse facility and a Japanese shrine in a local garden). The schemes that have been progressed to stage 3/4 of the cumulative assessment is shown in **Table 12-18**. The stages of the planning permission analysis are described

and presented in **Table 1-1** of Shortlisted Cumulative Schemes within **Appendix 5A** of this Environmental Statement **[EN010106/APP/6.2].**

Table 12-18: Planning applications in proximity to the scheme

Application reference	Description	Distance from the Order limits
DC/20/1500/EIASCO (connected to 20/01081/SCOPE, DC/21/1621/HYB, 21/01168/ESHYB)	70 kilometre (km) 'Potable Water Pipeline' between Bexwell and Bury St Edmunds together with associated connections and above ground apparatus.	Cuts across Grid Connection Route A
21/00406/FUM	Erection of bund for animal welfare (livestock and race horses).	Adjacent to Sunnica West Site A
DC/21/0217/FUL	Planning application for: a. Commercial polyhouses with office and welfare area; b. hardstanding and loading bays, car parking, reservoir, landscaping and associated works; new access.	Adjacent to Sunnica East Site B
DC/15/2529/EIASCR	Proposed 130 dwellings.	<1km east of Sunnica East site
DC/21/1510/FUL	Planning application - 148 dwellings with associated open space, highway and landscaping.	<1km east of Sunnica East Site B
DC/19/0444/EIASCR	Extension to existing caravan park.	<1km south east of Sunnica East site
20/00316/FUL	Proposed single storey Japanese shrine, located in the garden to the south of Fordham Abbey, with hard landscape footpath leading to entrance of the building.	<1km east of Sunnica West site B
21/00554/SCREEN	Proposed development for the erection of an industrial/warehouse facility (Use Class B2/B8) with servicing, ancillary office accommodation, car parking, formation of new access, landscaping and associated works.	<1km west of Sunnica West Site B
DC/14/1565/AG2	Determination in Respect of Agricultural Development - Construction of irrigation reservoir (12 million gallons).	Adjacent to cable route corridor between Sunnica East sites
DC/18/0851/FUL	Planning Application - Vehicle de-pollution facility within a steel framed enclosure.	Adjacent to South East of Sunnica East Site B
SCC\0132\17F	Extension of existing quarry involving the extraction of sand and gravel and importation of inert materials for restoration back to agriculture and woodland belt.	Adjacent to Sunnica East Site B

Application reference	Description	Distance from the Order limits
SCC\SC\0230\16F	Request for EIA Screening and Scoping Opinion. Site 19 for the proposed extension to existing quarry with continued use of plant site and quarry access.	Adjacent to Sunnica East Site B
21/01276/SCOPE (connected to 21/00816/FUL)	SCOPING OPINION - Following Screening Opinion 21/00854/SCREEN for the proposal for Solar PV development, battery storage and cable connection at Land North of New England Farm, Heath Road, Swaffham Bulbeck.	Adjacent to Burwell Substation

Source: AECOM analysis of local planning portals, 2021

12.6.11 The only allocated development land located within the Order Limits is employment allocations FRD7 and FRD6 identified in the East Cambridgeshire Local Plan, crossing Grid Connection Route B. There are multiple development allocations located within 1km of the Order limits. The closest of these are quarries adjacent to the Sunnica East Site B boundary. Within 1km of the Sunnica East Site B boundary are four allocations for residential dwellings, and a mixed-use allocation. These are presented in **Table 12-19.**

Table 12-19: Development allocations in proximity to the Scheme

Policy reference	Description	Area	Distance from the Order limits	Status
M17, and IL11/SAR25	Barton Mills Chalk Quarry - safeguarded minerals site; and inert landfill/ Secondary Aggregates/Recycling	N/A	adjacent to west of Sunnica East Site B boundary	Adopted July 2020
M9/IL4/CB13; and SAR11	Bay Farm, Worlington Quarry - safeguarded minerals site/inert landfill/concrete batch plant; and Secondary Aggregates/Recycling	N/A	adjacent to west of Sunnica East Site B boundary	Adopted July 2020
SA9(a)	Land off Turnpike Road and Coopers Yard - Residential allocation for approximately 132 dwellings	9.07 ha	<1km to south west of Sunnica East Site B boundary	Adopted September 2019
SA9(d)	Land west of Newmarket Road and north of Elms Road - residential allocation for approximately 125 dwellings	4.15 ha	<1km to south west of Sunnica East Site B boundary	Adopted September 2019
SA10(a)	Land north of Acorn Way - mixed use allocation including approximately 300 dwellings and 8ha of employment land and 3ha for a new primary school	27.40 ha	<1km to south west of Sunnica East Site B boundary	Adopted September 2019

Policy reference	Description	Area	Distance from the Order limits	Status
SA9(b)	Land east of Red Lodge - residential allocation for approximately 140 dwellings	5.50 ha	<1km to south west of Sunnica East Site B boundary	Adopted September 2019
SA9(c)	Land east of Red Lodge (south) - residential allocation for approximately 382 dwellings	14.97 ha	<1km to south west of Sunnica East Site B boundary	Adopted September 2019

Source: AECOM analysis of planning documents, 2021

Agricultural Land Resource

12.6.12 ALC surveys were carried out across the Sites in addition to some land which was later excluded from the final design. The survey did not include the cable route or Burwell National Grid Substation Extension. The cable route will remain available for agricultural use after development and as a consequence the Scheme will not result in this land being unavailable for agricultural purposes. The latter comprises a small area of land-take (less than 1ha) and it has been assumed as a worst case that this land is BMV land. The assessment of agricultural land resource takes this assumption into account. However, please note that this area of land has not been added to the total presented in **Table 12-20** below because this result is based on an assumption, rather than collected data.

12.6.13 The combined detailed surveys within the Sites found agricultural land in ALC Grades 3a, 3b and 4. With no land in Grades 1 or 2, the Grade 3a land is the only best and most versatile agricultural land within the Sites. The distribution of ALC grades within the Sites is shown on Figures 12-2 and 12-3, with areas given in **Table 12-20** below.

12.6.14 Grade 3a land is found at three locations within the Sites, covering a total area of 37.3ha. The largest block of Grade 3a land is found to the east of the A11 in the area assessed by MAFF. The MAFF survey work found light textured soils over rootable chalk rubble with impenetrable chalk below. Soil droughtiness is the main limiting factor placing this land in Grade 3a. The MAFF assessment upgraded this area to ALC Grade 2 owing to irrigation; however, moderating a drought limitation for irrigated land in this way is no longer supported by Natural England. The ALC grade should therefore return to the MAFF assessment of Grade 3a on drought without the allowance for irrigation.

12.6.15 Two more small areas of Grade 3a land are found in the Order limits, one to the north near Worlington and one to the south west near the Foxburrow Plantation. This land is similar to the Grade 3b land surrounding it, limited to grade by soil droughtiness. However, the soil profile has sufficient additional clay and/or depth to cross the threshold into the lower soil droughtiness limitation to Grade 3a.

12.6.16 Grade 3b land covers 493.3ha within the Order limits. Soil profiles are typically light textured and freely drained with a parent material of chalk or superficial deposits of sands and gravels found from half a meter depth. In places there are also limitations to Grade 3b for restricted depth and a high volume of large stones (retained by a 20mm sieve) in the topsoil.

12.6.17 In addition, smaller areas of Grade 3b land are found in of Sunnica East Site A, bordering the Lee Brook watercourse, and to the west of the Sites near Snailwell where the land has a soil wetness limitation. The land is extremely low lying with impeded drainage, elevated risk of flooding and groundwater wetness issues. Environment Agency flood risk mapping identify these parts of the site as having the highest flood risk as detailed in **Appendix 12B** of this Environmental Statement **[EN010106/APP/6.2]**.

12.6.18 Grade 4 land covers approximately 393.4ha of the Sites Soil profiles are broadly similar to those for the majority of the Grade 3b drought limited land described above, but with shallower and/or lighter soil profiles that further limit the volume of crop available water that can be retained. Soil droughtiness is the dominant factor restricting this land to ALC Grade 4.

12.6.19 Non-agricultural land in the Sites comprises farm buildings and hard standing, woodland and tree belts and a reservoir. It also includes land on adopted highways for junction improvements. The combined area of non-agricultural land is 57.0ha.

Table 12-20: Agricultural Land Classification grade distribution

Agricultural Land Class	Total Area (Ha)	Percentage of the 'Sites' (%)
3a	37.3*	3.8
3b	493.3	50.3
Grade 4	393.4	40.1
Non-Agricultural	57.0	5.8

**Note: Due to a lack of survey data at Burwell National Grid Substation Extension for the reasons set out in Section 12.4, it has been assumed as a worst case that this land is BMV land. The total presented in this table does not include the area of land required for Burwell National Grid Substation Extension (less than 1ha) because this is based on an assumption (and this table presents collected data).*

Soil Resources

12.6.20 Soils within the Order limits are predominantly light textured developed directly over the surface geology of chalks and river terrace deposits. A few areas of distinct variation can be found such as the low-lying land close to Snailwell but the extent of these is fragmented and marginal.

12.6.21 The majority of the agricultural land is in arable rotation with annual cultivation. The light textured soil has been aerated by cultivation enabling soil organic matter to be rapidly metabolised, falling to a low equilibrium regardless of return of organic matter to land.

12.6.22 The light textured soil material is vulnerable to deep compaction of subsoil from high axle loads such as grain trailers and harvesters. Compaction of the topsoil can be easily rectified by cultivation but with increasing depth rapidly becomes more difficult to rectify. Such deep compaction can impede root development, limiting the crop available water held by the soil.

Farming Circumstances

12.6.23 Six separate farm businesses occupy land within the Sites. The extent of occupation within the Sites is shown on Annex A, Figure 1 of **Appendix 12B** of this Environmental Statement **[EN010106/APP/6.2]**.

12.6.24 All are predominantly arable dry land units with rotations that include high margin crops heavily dependent on irrigation (potato, sugar beet and onion) along with combinable crops such as wheat. The volume of irrigation water available to each farm is limited by abstraction licences. Some farm units have given over agricultural land for reservoirs to store water abstracted over winter for use during the following growing season.

12.6.25 Crops such as potato and onion require specialist cultivation and harvest equipment as well as storage and grading facilities. This is in contrast to standard arable rotation crops such as wheat and barley that can use the same seed drill, combine harvester and grain store. Some of the six farm businesses provide specialist contractor services growing potato, onion and carrot on land belonging to other farms as well as their own. The remainder use contractors such as these for the high margin crops in their rotations.

12.6.26 Occupants along the cable route were contacted regarding agricultural land use and the potential for off site agricultural effects, such as fragmentation. A limited number of responses were received and of these, only two were for agricultural occupants, the others being non-commercial equestrian land and an outdoor activity facility.

12.6.27 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 Common Agricultural Policy support will not be confined to farmland within the Sites.

Population and labour force

Population

12.6.28 The evidence in this section is primarily based on Office for National Statistics ('ONS') Census 2011 data, NOMIS (official labour market statistics) datasets, and housing market data from the Land Registry online which provides data for Lower Super Output Areas ('LSOAs') and Middle Super Output Areas ('MSOAs') and allows for an analysis of the characteristics of the study area. While this data is not recent, it provides the most robust evidence base for local level data. Alternative and more recent datasets are presented where available and appropriate.

12.6.29 The study area has a residential population of 133,600, this has increased from 124,700 in 2008 to 133,600 in 2018, representing a 7% increase over

ten years (Ref 12-2). These population growth rates are in line with the overall rates recorded for the East of England and England and Wales during the same time period (9% and 3.7% respectively).

12.6.30 In 2018, 82,013 (61.3%) of residents within the study area were of working age (defined by ONS as men and women aged 16 to 64). This is a similar rate to the rates recorded for the East of England (61%) and England and Wales as a whole (62.8%) (Ref 12-3).

Employment

12.6.31 According to the Annual Population Survey (Ref 12-3), the unemployment rate among working age residents in the study area in 2019 was 4.2%, significantly higher than East of England (3.2%) and England and Wales (3.9%).

12.6.32 Residents of working age residing in the study area in 2019, had an economic activity rate of 71.8%. This rate is lower than recorded for England and Wales (78.9%) and the East of England 80.6%. This is shown in **Table 12-21.**

Table 12-21: Economic activity and unemployment rates

Economic Indicator	Study Area	East of England	England and Wales
Economic activity rate (for residents aged 16-64)	71.8%	80.6%	78.9%
Unemployment rate (for residents aged 16-64)	4.2%	3.2%	3.9%

Qualifications and occupational profile

12.6.33 In the study area, 28% of working age residents have a degree level qualification or higher (National Vocational Qualification (NVQ) Level 4+) (Ref 12-3), similar to the rate for England and Wales (27%) and the East of England (26%). However, the proportion of residents in the study area with no qualifications is 22%, which is slightly lower than 23% recorded for East of England and England and Wales (both 23%).

12.6.34 The proportion of residents in the study area engaged in level 3 and 4 Standard Occupation Classification ('SOC1-3') occupations (43%) is slightly higher than that recorded for both the East of England (41%) and England and Wales (41%). The proportion of residents in the study area in elementary occupations (10.2%) is slightly lower than recorded for East of England (11%) and England and Wales (11%).

Deprivation

12.6.35 Based on the 2019 Indices of Multiple Deprivation ('IMD') (Ref 12-4), West Suffolk is the 176th most deprived borough out of 326 districts in England (where 1 is the most deprived), and the 20th most deprived out of 47 districts in the East of England. East Cambridgeshire is less deprived in comparison with a rank of 272nd most deprived borough out of 326 districts

and 38th most deprived out of 47 districts in the East of England. No lower layer super output areas ('LSOAs')[2] in East Cambridgeshire or West Suffolk are ranked in the top 10% most deprived parts of the country.

Local Economy

12.6.36 In 2018, the workforce of the study area comprised around 83,345 employees compared to a workforce of around 168,000 employees in East Cambridgeshire (Ref 12-2). According to the most recent data on commuting patterns from the 2011 Census, a majority (60%) of the workforce in the study area also live in the area (Ref 12-8).

12.6.37 **Table 12-22** presents a detailed breakdown of employment by broad industry group in the study area, the East of England, and England and Wales. Based on the most recently available data from the 2011 Census on employment by group, the study area's economy, the highest levels of employment are recorded in the health sector (18.5% of employment) and professional, scientific & technical (15.5%) sectors.

12.6.38 Specific to this assessment, the construction sector contributes 7% of employment within the study area which are both higher than the proportions recorded regionally (6%) and nationally (5%). There are around 4,900 construction jobs found within the study area.

12.6.39 In addition, the mining, quarrying and utilities broad industrial group (which includes employment from the generation of energy) is slightly less prominent in the study area compared to regional and national levels. This group represents 0.4%% in the study area lower than both regional and national levels (1.3% and 1.2% respectively).

Table 12-22: Employee jobs by Broad Industrial Group in 2018

Sector	Study Area (%)	East of England (%)	England and Wales (%)
Agriculture, Forestry & Fishing	0.1	1.6	0.6
Mining, Quarrying & Utilities	0.4	1.3	1.2
Manufacturing	8.0	7.4	8.2
Construction	7.0	6.0	5.0
Motor Trades	2.0	2.5	1.7
Wholesale	4.0	4.4	3.9
Retail	6.0	9.6	9.5
Transport & Storage	5.0	5.5	4.7

[2] Lower Layer Super Output Areas are a geographic hierarchy designed to improve the reporting of small area statistics in England and Wales. Lower Layer Super Output Areas are built from groups of contiguous Output Areas and have been automatically generated to be as consistent in population size as possible, and typically contain from four to six 'Output Areas'.

Sector	Study Area (%)	East of England (%)	England and Wales (%)
Accommodation & Food Services	5.0	6.6	7.4
Information & Communication	2.0	3.4	4.5
Financial & Insurance	0.8	2.3	3.5
Property	1.1	1.7	1.7
Professional, Scientific & Technical	15.5	9.8	8.5
Business Administration & Support	7.4	10.3	9.2
Public Administration & Defence	3.1	2.9	4.1
Education	13.3	8.9	9.0
Health	18.5	11.6	13.0
Arts, Entertainment, Recreation & Other	2.8	4.2	4.5

Source: Census 2011, Business Register and Employment Survey 2018

12.6.40 GVA is a measure of value of goods and services produced in an area of the economy. In 2015, East Cambridgeshire generated around £1.9 billion GVA at current basic prices within its economy and West Suffolk generated around £1.3 billion GVA (Ref 12-10).

12.6.41 East Cambridgeshire's GVA per head in 2015 was £22,000, which is similar to West Suffolk with £21,041 GVA per head, with both districts recording slightly lower rates than the regional average for the East of England (£23,901) and lower than the average for England and Wales (£25,722). These statistics suggest that both district's economies are underperforming compared to regional and national indicators.

Public Rights of Way

12.6.42 Both the East Cambridgeshire and West Suffolk Local Plan documents emphasise the importance of ensuring existing PRoWs are kept and minimal disruptions of PRoWs during the construction phase.

12.6.43 As described above in the existing and land use section, the Scheme is on agricultural land where there are several PRoWs on or abutting the Scheme, as illustrated in Figure 12-4.

12.6.44 There are three PRoWs located within the boundary of the Sunnica East Site A. Three PRoWs (W-257/002/X, W-257/002/0 and W-257/007/0) run from Mortimer Lane in the south to Beck Road in the north, crossing the south-west part of the site.

12.6.45 There is one PRoW located within the boundary of Sunnica East Site B. PRoW (W-257/003/0) runs along the south-western boundary from Turnpike

Road at Red Lodge in the south-east to Badlingham Manor in the north-west. An unclassified road (U6006), which is a publicly accessible route, including for equestrians, extends northwards from Elms Road to Worlington. To the west of Sunnica East Site B the B1102 provides a footway for a section along the northern carriageway, alongside vehicles travelling eastbound, which is approximately 2m wide between North Street and East View. To the north, on Newmarket Road, footways are provided on both sides of the carriageway between the B1102 and The Paddocks.

12.6.46 There are no PRoWs situated within the boundary of the Sunnica West Site A or Sunnica West Site B itself. Adjacent to Site A there is Snailwell 5 bridleway (PRoW 204/5) which runs along the south-west boundary of the Site. Snailwell 1 footpath (PRoW 204/1) crosses the land to the north-west of the Sunnica West Site A boundary.

12.6.47 There is one footpath 49/7 that intersects Grid Connection Route A, located to the south of the Sunnica East Site B, accessed by users making local journeys between Chippenham and Red Lodge.

12.6.48 There are six PRoWs that intersect with Grid Connection Route B. Towards Snailwell footpath PRoW 204/1 connects Snailwell with Chippenham Park. Heading west from Sunnica West Site B, footpath 92/19 runs from through agricultural fields between Fordham and Snailwell. Then footpath 35/10 and 35/11 which runs between Wicken and Burwell passing through several agricultural fields. There are also two PRoWs 35/6 and 35/17 running between Burwell and Reach, again through agricultural land.

12.6.49 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. There will be some short-term road closures however with alternative routes provided, these have not been assessed as they are not anticipated to have any significant effects on users of PRoWs.

Local Amenities

Residential Properties

12.6.50 The study area is mostly rural and relatively sparsely populated. The closest residential properties to the Sunnica East Site A are a small group of properties located 500m to the north in Isleham and in Sunnica East Site B there are also a small group of properties located immediately north in Worlington. The Sunnica West Site A lies approximately 100m from a lone property on Dane Hill Road. There are no residential properties in proximity to Sunnica West Site B.

12.6.51 The Burwell National Grid Substation Extension preferred location (Option 1) is located to the east of the existing substation and the closest residential properties are located 200m to the east in the village of Burwell. The alternative location, Option 2, is to the north of the existing substation approximately 350m from the village of Burwell.

Business Premises

12.6.52 There are no business premises lying directly within the Order limits of the Scheme. The closest business to Sunnica East Site A is a bus/coach hire depot located 500m north in Isleham as well as a cluster or premises within the village including a restaurant, post office and a medical centre.

12.6.53 The closest businesses to the Sunnica East Site B are a cluster of premises at Worlington comprising two vehicle repair shops, a restaurant and a food wholesale supplier. There is also a ready mix concrete supplier 300m south of the Sunnica East B Site nearby Elms Road.

12.6.54 The closest business to Sunnica West Site A is the La Hogue Farm Shop & Café located approximately 330m to the north. Chippenham Park Gardens are located 100m north from the Site, which offers a private garden and wedding venue. Located adjacent to the south of the Site there is also Godolphin Gallops, a horse rehabilitation centre, which extends from the north of the A14 to border Snailwell and is adjacent to the southern boundary of Sunnica West Site A. Limekilns gallops, a similar horse training ground, is located 500m from Sunnica West Site A.

12.6.55 To the south of Sunnica West Site B approximately 100m to the Sunnica West Site B are a cluster of businesses including an auto repair shop, a food store, a computer store, a chemical industry and a scrap metal dealer. To the west approximately 100m to the Sunnica West Site B there are also a few businesses including a packaging company, a pharmaceutical company, a wholesaler and a trucking company.

Community Facilities

12.6.56 There is a selection of community facilities and recreation facilities lying within the study area of the Scheme. **Table 12-23** sets out these facilities and their distances from the Order limits.

Table 12-23: Community and Recreational facilities

Recreation receptor	Description	Approximate distance from the Order limits
Sunnica East Site A		
The Ark Church Isleham	Church in the small village of Isleham.	500m
Isleham Church of England	Church of England in the small village of Isleham.	600m
The Beeches Isleham Community Centre	The Beeches Isleham community centre has a range of facilities including a main hall, meeting rooms and a café for the use of the community.	800m

Recreation receptor	Description	Approximate distance from the Order limits
West Row Baptist Church	Baptist Church in the small village of West Row offering a range of activities including youth groups and after school clubs for all ages.	1.4km
The Golden Boar Inn	Traditional inn with rooms in the small village of Feckenham.	1.5km
Sunnica East Site B		
Royal Worlington and Newmarket Golf Club	An outdoor golf course with 9 holes.	0.3km
All Saints Church	Church of England in the small village of Worlington.	0.5km
Worlington Cricket Club	Cricket club in the village of Worlington.	0.6km
Mildenhall & Red Lodge Rugby Club	Rugby club in the village of Red Lodge.	1.6km
Sunnica West Site A		
WildTracks Outdoor Activity Park	An outdoor sports activity facility offering motocross, karting or quad bike tracks and archery.	0.1km
Red Lodge Karting	An outdoor karting facility with circuits of 1,200m and 700m.	1km
Chippenham Cricket Club	Cricket club in the small village of Chippenham.	1.1km
Sunnica West Site B		
George and Dragon pub	A family-run pub located in the small village of Snailwell.	0.5km
St Peter Church	Church of England in the small village of Snailwell.	0.7km

Sensitivity of Receptors

12.6.57 **Table 12-24** identifies the sensitivity of effects on socio-economic receptors identified within the baseline and sets a sensitivity value based on the criteria highlighted in **Table 12-9**, **Table 12-11,** and **Table 12-13**.

Table 12-24: Sensitivity of Socio-Economic and Land use receptors

Impact	Sensitivity of receptor
Agricultural land	Medium

Impact	Sensitivity of receptor
Soil resources	Medium
Local Economy (employment creation during construction, operation and decommissioning)	Varies due to type of employment activity - Low to Medium
GVA during construction phase	Medium
Impact on PRoW	Very Low or Low
Local amenities and land use - Residential Properties	Varies due to type of amenity - Medium to High
Local amenities and land use - Business Premises	Varies due to type of amenity - Low to Medium
Local amenities and land use - Community Facilities	Varies due to type of amenity - Low to Medium
Local amenities and land use – Development Land	Variable by use - Low to Medium

Future Baseline

12.6.58 The future baseline is anticipated to be the same as the existing baseline for socio-economics and land use. The population projections for the area have been presented in the existing baseline conditions. Businesses may open and close; however, the exact details of this cannot be known in advance. Therefore, 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.

12.6.59 The future baseline for the Sites 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 Sites. Details of the farm businesses occupying agricultural land within the Sites are presented in **Appendix 12B** of this Environmental Statement **[EN010106/APP/6.2]**.

12.7 Embedded Design Mitigation

12.7.1 Primary mitigation measures are embedded within the Scheme, as set out in the respective chapters, to reduce other construction and operational effects (such as noise, air quality, transport and landscape) which in turn will mitigate the effects on the local community and existing facilities from a socio-economic and land use perspective.

Table 12-25: Embedded design mitigations from respective chapters

Embedded Design Mitigation Chapters	Paragraph reference of mitigations
Chapter 10 Landscape and Visual Amenity	Para 10.7.1- Para 10.7.9
Chapter 11 Noise & Vibration	Para 11.7.1- Para 11.7.5
Chapter 13 Transport & Access	Para 13.7.1 – Para 13.7.12
Chapter 14 Air Quality	Para 14.6.1

12.7.2 Appropriate measures to mitigate temporary impacts on users of PRoWs during the construction and decommissioning phases have been proposed. The temporary closures and, where appropriate, diversions will be supported by clear signs and where possible will be planned and programmed to minimise disruption to users.

12.7.3 The CEMP will include a SMP providing guidance on handling of soil material, specific to the soil resource present. This will serve to conserve both soil volume and functional capacity for beneficial reuse, from the small areas where soil will be stripped. The SMP will also cover the establishment of the permanent green cover at the suspension of arable cropping that will remain in place for the duration of the Scheme operation. In addition to protecting the soil surface from damage, this green cover will be a forage crop for grazing by livestock. The composition of the seed mix used can be varied across the site to deliver specific yield and biodiversity objectives appropriate to the location. Details of the proposed planting are provided in **Appendix 10I Landscape and Ecology Management Plan** of this Environmental Statement **[EN010106/APP/6.2]**. A Framework CEMP is provided in **Appendix 16C** of this Environmental Statement **[EN010106/APP/6.2]**.

12.7.4 The development of farm land for solar power generation involves little disturbance of the soil and retention of the land resource for future use. These embedded design mitigations reduce the potential for adverse impacts on farm businesses, soils and the agricultural land resource.

12.8 Assessment of Likely Impacts and Effects

12.8.1 The impacts and effects (both beneficial and adverse) associated with the construction, operation (including maintenance), and decommissioning of the Scheme are outlined in the sections below. The assessments have been undertaken following consideration of the embedded mitigation measures as described in Section 12.7.

Construction (no earlier than 2023)

Employment during Enabling Works, Construction and Commissioning

12.8.2 The estimated construction period is expected to last 24 months. There is the potential for a phased construction. The intensive 24 month construction period would require the same level of activity and output as in a phased construction programme. A phased construction would therefore not affect the outcomes of the assessment and therefore assuming an intensive 24 month construction period is robust. 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 construction.

12.1.3 The Applicant estimates that the Scheme will require an average of 964 gross Full-time equivalent (FTE) construction jobs on-site per day during this construction period. The peak number of staff across the Scheme is forecast to occur in month 9 of the construction period with 1,393 staff per day. Across the entire construction period the average number of staff required for the Sunnica West Sites is forecast to be 416 staff, 502 staff for the Sunnica East Sites and 46 staff for the three on-site substations, Burwell Substation Extension and the cable corridor, resulting in an average of 964 staff per day across the Scheme.

Leakage

12.8.3 Leakage effects are the benefits to those outside the effect area, defined as a 45 minute travel study area as shown in **Table 12-1**. Analysis carried out of Census 2011 data indicates that 12% of people working in the study area live outside of the area (Ref 12-8). This corresponds to approximately the medium leakage rate as set out by HCA Additionality Guide (Ref 12-1). This rate implies that although a reasonably high proportion of employment opportunities will be retained in the effect area, a noticeable amount of jobs will be taken up by people living outside the impact 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 professions owing to the scarcity of such resources within localised areas compared with less skilled professions.

12.8.4 An adjustment of 12% has therefore been applied to the estimated 964 gross construction jobs to find the jobs created outside the target area. Thus, it is estimated that the construction period at the Scheme will create 848 jobs for residents within the study area and 116 jobs for residents outside of this area.

Displacement

12.8.5 Displacement measures the extent to which the benefits of a development are off-set 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.

12.8.6 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.

12.8.7 The HCA Additionality Guide (Ref 12-1) 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. This factor is a best practice approach in the absence of special 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 723 jobs per year during the construction period.

Multiplier Effect

12.8.8 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 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).

12.8.9 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. In the Solar Powered Growth in the UK report (Ref 12-9), CEBR give an employment multiplier for large-scale solar PV investments of 2.33 – i.e. for every job supported on-site, 1.33 indirect/induced jobs are supported in the wider economy. For the study area, a multiplier effect of 2.33 has therefore been considered appropriate. Applying the multiplier to the total net direct employment figure of 723 workers results in net indirect and induced employment of 962 jobs per annum during the demolition and construction period, together generating 1,685 total net jobs per annum.

Net Construction Employment

12.8.10 **Table 12-26** presents the temporary employment generated by the Scheme identified above, accounting for leakage, displacement and multiplier effects. The Scheme will support, on average, 1,685 total net jobs per annum during the construction period. Of these, 1,483 jobs per annum will be expected to be taken-up by residents within the study area, whilst 202 jobs will likely be taken-up by workers living outside the study area.

Table 12-26: Net additional construction employment per annum from the Scheme

	45 min travel Study Area	Outside Study Area	Total
Gross Direct Employment	848	116	964
Displacement	-212	-29	-241
Net Direct Employment	636	87	723
Indirect & Induced Employment	847	115	962
Total Net Employment[3]	**1,483**	**202**	**1,685**

Source: AECOM Calculations 2021

12.8.11 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. The study area currently has around 4,900 workers in its construction sector (Ref 12-5).

12.8.12 The impact of construction employment generation on the local economy has been assessed as temporary medium beneficial, which results in a medium-term temporary **moderate beneficial** effect. This is considered significant.

Gross Value Added during the construction phase

12.8.13 Applying the average GVA per construction worker in the area to the gross number of construction jobs generated from the Scheme gives the total GVA arising from the construction period.

12.8.14 In East Cambridgeshire, the average GVA per worker in the construction sector was £62,608 in 2015 (Ref 12-5 and Ref 12-10). In West Suffolk, the GVA per worker in the construction sector was £63,157. Therefore, by taking an average of both GVA figures, this results in a final figure for the study area of £62,883 GVA per worker in the construction sector. By applying this figure to the total construction workers generated by the Scheme, it is estimated the construction phase will contribute £58 million to the economy, of which £51 million is within the 45 minute travel study area; as shown in **Table 12-27.**

[3] Sum of Net Direct Employment and Indirect & Induced Employment.

Table 12-27: Gross value added per annum from the Scheme during the construction phase

	45 min travel Study Area	Outside Study Area	Total
GVA during the construction phase (£)	£51,020,751	£6,957,375	£57,978,126

Source: AECOM Calculations 2021

12.8.15 The impact of GVA generation from the construction phase on the local economy has been assessed as medium-term temporary medium beneficial, which results in a temporary **moderate beneficial** effect. This is considered significant.

Public Rights of Way

12.8.16 Changes to journey times, local travel patterns, and certainty of routes for users would arise from the temporary closures and diversions of PRoWs. Effects during construction on relevant routes are set out in the following paragraphs for the land within the Order limits and are shown in Figure 12-5.

12.8.17 All closures of PRoWs will be avoided as far as possible including along the cable route. If closure of routes is required then as a worst-case scenario it is assumed the PRoW would be closed for up to three weeks.

Sunnica East Site A

12.8.18 Temporary disruption to users making local journeys on bridleways W-257/007/0, W-257/002/X and W-257/002/0 between Freckenham and Isleham would be experienced due to these conjoining routes being temporarily severed, preventing access. Users would be able to use an alternative route via Beck Road (approximately 1km in additional journey length), to complete their journeys, though this route is also used by traffic. Impacts arising from this on user journeys are assessed to be temporary high adverse, and the effect on users is assessed to be temporary **moderate adverse** effect. This is considered significant.

Sunnica East Site B

12.8.19 Temporary disruption to users making local journeys on the unadopted bridleway (U6006) which cuts diagonally from Worlington to Elms Road would be experienced due to the entire route being temporarily severed, preventing access. Users would be able to use an alternative route via Freckenham Road (approximately 1.8km in additional journey length), to complete their journeys, though these roads will also have traffic using them. Though U6006 is not a right of way through which access is assured, the impacts arising from this on user journeys are assessed to be temporary medium adverse and the effect on users is assessed to be temporary **minor adverse** effect. This is not considered significant.

12.8.20 To the south of the Site is footpath W-257/003/0 where temporary disruption to users making local journeys on this footpath between Freckenham and Red Lodge would be experienced due to this route being temporarily severed within the cable corridor only, preventing access. Users would be able to use an alternative route via Mildenhall Road (approximately 1.2km in additional journey length), to complete their journeys. Impacts arising from this on user journeys are assessed to be temporary medium adverse, and the effect on users is assessed to be temporary **minor adverse** effect. This is not considered significant.

Sunnica West Site A

12.8.21 The bridleway to the west of the Site (204/5) will not be closed during construction and therefore there are no expected effects during the construction phase.

Sunnica West Site B

12.8.22 There are no PRoWs adjacent or within the Site and therefore there are no expected effects during the construction phase.

Grid Connection Route A

12.8.23 Grid Connection Route A intersects footpath 49/7, temporary disruptions to users using this footpath to travel between Chippenham and Red Lodge would be experienced due to the route being temporarily severed. Although in the added presence of traffic, users would be able to use an alternative route via Dane Hill Road (approximately 300m in additional journey length). Using this route should result in minimal disruption, and thus impacts on users are assessed to be low adverse which results in a **negligible effect**. This is not considered significant.

Grid Connection Route B

12.8.24 Grid Connection Route B intersects footpath 204/1 between Snailwell and Chippenham. This intersection will be managed during the construction process to ensure the PRoW will not be closed or diverted during the construction phase. Impacts on users are assessed to be low adverse which results in a **negligible effect**, which is not considered significant.

12.8.25 Temporary disruptions to users on footpath 35/10 between Burwell and Reach would be experienced due to a small section of this route being temporarily severed. Users would be able to take an alternative route via First Den Drove though these roads will also have traffic using them. Using this route should result in minimal disruption, and thus impacts on users are assessed to be low adverse which results in a **negligible effect**, and which is not considered significant.

12.8.26 Temporary disruptions to users on footpath 92/19 between Fordham and Snailwell would be experienced due to a small section of this route being temporarily severed. Although in the added presence of traffic, users would be able to take an alternative route via the pedestrian route along the A412. Using this route should result in minimal disruption, and thus impacts on

users are assessed to be low adverse which results in a **negligible effect**, and which is not considered significant.

Agriculture and Soil

Agricultural Land Resource

12.8.27 Construction work at the Sites will result in the temporary suspension of agricultural management of the land. Of the 37.3ha of BMV land within the Sites, approximately 31.4ha will house solar infrastructure. The remaining approximately 5.9ha of the BMV land not built on will form part of the native grassland planting throughout the Sites. None of the sites for the BESS or compounds will fall within BMV land. The land resource that is to house the solar infrastructure will not however be lost or degraded, because the soil resource will remain in an undisturbed state below and between solar panels, with a forage crop. The magnitude of change will therefore be very low with the sensitivity of the receptor (agricultural land containing some Grade 3a but mostly Grades 3b and 4) being low. This results in a **negligible effect** (no agricultural land resource being lost) and is not considered significant.

Soil Resources

12.8.28 Construction work will involve little displacement of soil material, the dominant impact being the trafficking over land with delivery and construction vehicles. In this regard construction activity will be similar to the current baseline of arable land use, with trafficking over the land by heavy farm machinery. The magnitude of change is therefore very low, and the sensitivity of the light textured soil is low. This results in a **negligible effect** which is not considered significant.

Farming Circumstances

12.8.29 Construction work at the site will start a prolonged suspension of the current agricultural use of the land, predominantly arable rotation of combinable crops with higher margin crops such as potato. Although temporary, this suspension of a farm enterprise for the agricultural occupants will be a medium magnitude of change. However, construction will also mark the start of a new diversified enterprise for the agricultural land owners as the site is leased to the Scheme. This benefit will also be a medium magnitude of change. The overall magnitude of change is therefore considered to be low.

12.8.30 The sensitivity of the arable enterprises to the loss of this land will be low as the farm businesses that carry out their own land work also manage additional land not affected by the Scheme. Construction effects on the occupying farm businesses are therefore considered to be **negligible** and classed as not significant.

Local Amenities and Land use

Residential Properties, Business Premises, and Community Facilities

12.8.31 The construction of the Scheme would not require the demolition of residential or business premises or community facilities located within the study area, nor would it require land temporarily from these properties.

12.8.32 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.

12.8.33 Taking into account the 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.

12.8.34 Road closures required for the construction of the scheme would result in negligible driver delays for vehicle travellers and therefore businesses would not be impacted by these.

12.8.35 Therefore, there are no effects arising from the Scheme on these local amenities during construction, which results in a **negligible effect** which is not considered significant.

Development Land

12.8.36 Potential temporary impacts on development land (this being unimplemented planning permissions and development allocations in the Local Planning Authority development designations) are assessed in this ES chapter, and detail is provided in **Table 12-18** and **Table 12-19.**

12.8.37 There is an application at pre-submission stage for the Potable Water Pipeline that crosses Grid Connection Route A. There are no approved planning applications that fall within the Order limits. Planning applications that are in proximity to the Order limits include applications for 130 dwellings, a caravan park extension, water pipeline crossing cable route, commercial polyhouses and the construction of an industrial/warehouse facility. These planning applications are either adjacent to, or located away from, the Order limits and as such no direct impacts or effects on access to them are anticipated. Details of the developments are included in **Table 12-18** and **Table 12-19.**

12.8.38 Therefore, there are no effects arising from the Scheme on these planning applications during construction which results in a **negligible effect**, and which is not considered significant.

12.8.39 There are no development allocations within the Order limits. Adjacent to the Order limits is an existing quarry and recycling facility. Within 1km of the Order limits is land for 125 dwellings; a mixed used development; land for 140 dwellings; and land for 382 dwellings. It is not anticipated that there will be any effect from the Scheme on these receptors which results in a **negligible effect**, and which is not considered significant.

Combined Effects on Receptors

12.8.40 The assessment has been undertaken for the Scheme as a whole, and therefore, the effects defined above account for any in-combination effects. Therefore, there are no combined effects on receptors related to socio-economic, land resources, soils resources or farming circumstances in the construction phase. The construction effects (pre-mitigation) are listed in **Table 12-28.**

Table 12-28: Summary of magnitude of impact and significance of effect for the Scheme during construction

Receptor	Sensitivity (Value)	Description of Impact	Magnitude of Impact	Effect Category	Significant effect (Yes / No)
Local economy of the 45 minute travel area	Medium	Employment generation during the construction phase	Medium beneficial	**Moderate beneficial**	**Yes**
Local economy of the 45 minute travel area	Medium	GVA generation during the construction phase	Medium beneficial	**Moderate beneficial**	**Yes**
Users of PRoWs W-257/007/0, W-257/002/X, and W-257/002/0	Low	Impacts on PRoW users during the construction phase	High adverse	**Moderate adverse**[4]	**Yes**
Users of other PRoWs	Low	Impacts on PRoW users during the construction phase	Low to medium adverse	**Minor adverse / Negligible**	**No**
Agricultural Land Resource	Low	No loss of agricultural land resource to solar farm construction	Very Low adverse	**Negligible**	**No**
Soil Resources	Very Low	trafficking over land by construction vehicles	Very Low adverse	**Negligible**	**No**

[4] Disruption to users of W-257/007/0, W-257/002/X, W-257/002/0 between Freckenham and Isleham has been assessed as a moderate adverse effect.

Receptor	Sensitivity (Value)	Description of Impact	Magnitude of Impact	Effect Category	Significant effect (Yes / No)
Farming Circumstances	Medium	Construction will mark the start of a new diversified enterprise for the agricultural land owners as the site is leased to the Scheme	Low beneficial	**Negligible**	**No**
Local amenities and land use – Residential Properties, Business Properties and Community Facilities	Low	Impacts on residential properties, business premises and community facilities during the construction phase	No effect	**Negligible**	**No**
Local amenities and land use – Development Land'	Low	Land take of development land, affecting viability for future development of the land allocation.	No effect	**Negligible**	**No**

Operation (No earlier than 2025)

Employment

12.8.41 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 (deadweight)

12.8.42 'Deadweight' refers to outcomes which would have occurred without intervention such as if the Scheme were to result in a disruption to any existing economic activity currently occurring in relation to the Order limits.

12.8.43 The existing Order limits is agricultural land, and there is expected to be no employment loss as a result of the Scheme. This is as there are a number of dynamic farm businesses occupying the Sites that both offer specialist contractor services on third party land and use outside contractors on their own land. Transition to livestock management and any mechanical control of vegetation (mowing) within the Sites will also have a labour requirement. However, there may be some temporary jobs which will no longer be offered. This has been estimated to be close to two FTE jobs related to agricultural activities. Considering these are not permanent jobs which are being lost, the deadweight employment has been assessed as one permanent job will be lost.

Total net operational employment

12.8.44 It is anticipated that there will be up to 17 permanent staff onsite during the operational phase during a single shift, with staff working on a three shift pattern. 17 permanent staff is a forecast but could be more at points during the operational phase.

12.8.45 Assuming a leakage of 12% outside the study area, displacement of 25% and a 2.33 multiplier, it is estimated that the Scheme will result in a net creation of an estimated 30 jobs, of which at least 26 are within the study area. Accounting for the deadweight effects outlined above, the total net employment of the Scheme remains 29 jobs. This is presented in **Table 12-29.**

Table 12-29: Total net employment during operation of the Scheme

	Study Area	Outside Study Area	Total
Gross Direct Employment	15	2	17
Displacement	-3	-1	-4
Net Direct Employment	12	1	13
Indirect & Induced Employment	16	1	17
Deadweight Employment	-1	0	-1
Total Net Employment[5]	**27**	**2**	**29**

Source: AECOM Calculations 2021

12.8.46 It should be noted that the actual number of jobs generated by the Scheme may be greater than those represented in **Table 12-29** as part-time staff will be created to perform maintenance and engineering works from time to time to ensure the Scheme is operational over its operational life.

12.8.47 There are around 85,300 total jobs in the study area (Ref 12-5). In this context, and accounting for the additional net direct, indirect, induced and deadweight employment associated with the Scheme, the impact of operational employment generation on the local economy has been assessed as permanent, very low beneficial. This results in a permanent **negligible effect**, which is not considered significant.

Public Rights of Way

12.8.48 All of the PRoWs located within the Scheme that are closed temporarily during the construction phase will be re-opened during the operational phase.

Sunnica East Site A

12.8.49 To the north-west of the Site there will be a new permissive route on Beck Road during the course of operation; see Figure 12-6 for the indicative location (the final location is subject to agreement with the landowner). This may result in some reduction to local journey lengths and provide a safe route for the use of local residents in the area, during the operational phase of the Scheme, the impact is permanent (for the life of the Scheme) medium beneficial which results in a **minor beneficial effect**. This is not considered significant.

[5] Sum of Net Direct Employment and Indirect & Induced Employment minus Deadweight Employment.

Sunnica East Site B

12.8.50 To the north-east of the Site south of Freckenham Road (see Figure 12-6) there will be two new permissive routes intersecting the existing diagonal unclassified bridleway (U6006) (final location is subject to agreement with the landowner), during the operational phase of the scheme. One will create a loop to the western side of U6006, and the other creates a route to the east of U6006 to connect with Golf Links Road. These will provide a safe route for the use of local residents in the area during the operational phase of the Scheme, the impact is medium beneficial which results in a **minor beneficial effect**. This is not considered significant.

12.8.51 To the south of the Site on Elms Road (see Figure 12-6 for the indicative location, with the final location subject to landowner agreement) there will be one new permissive route intersecting the existing diagonal unclassified bridleway (U6006). This will connect U6006 with PRoW W-257/003/0 which runs to Red Lodge. It will provide a safe route for the use of local residents in the area during the operational phase of the Scheme. The impact is medium beneficial which results in a **minor beneficial effect**. This is not considered significant.

Agricultural Land Resource

12.8.52 On the commissioning of the Scheme the agricultural land resource can return to supporting agricultural production, grazing sheep. The land resource will not be lost or degraded during the operation of the Scheme. The magnitude of change will therefore be very low with the sensitivity of the receptor being low. This results in a **negligible effect** which is not considered significant.

Soil Resources

12.8.53 For the 40 year duration of the Scheme the soil resource will remain in place and benefit from an extended fallow. Permanent grassland cover will be established by provisions in the CEMP and the suspension of cultivation will allow a return to a higher equilibrium for soil organic matter, conferring multiple benefits to soil health including fertility, moisture retention and structural stability. Improving the structural stability of the light textured topsoil has benefits beyond future agricultural productivity, improving rainfall infiltration, reducing wind and water erosion and cutting the discharge of sediment to surface waters where it is detrimental to both water quality and flood risk. The beneficial magnitude of change over the 40 year suspension of ploughing over a substantial area of land will be medium, with the land having medium sensitivity to this change resulting in a **moderate beneficial** effect which is considered significant.

Farming Circumstances

12.8.54 Through the operation of the Scheme, the agricultural land owners will benefit from the income provided by this diversified enterprise. This 40 year diversification will displace existing arable enterprises from the land within the site, however this displacement will free up farm resources for application on other land, not least the limited volume of water that can be

abstracted under licence. The magnitude of beneficial change will be medium and the sensitivity of the receptor low, resulting in a **minor beneficial** effect which is classed as not significant.

Local Amenities and Land use

Residential Properties, Business Properties, and Community Facilities

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

12.8.56 Taking into account the results of the noise, air quality, visual and transport 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 effects arising from the Scheme on local amenities which results in a **negligible effect**, which is not considered significant.

Development Land

12.8.57 Potential operational phase impacts on development land (unimplemented planning permissions and development allocations in the Local Planning Authority development designations) are assessed in this ES chapter, and detail is provided in **Table 12-18** and **Table 12-19**. There is not expected to be any impact on the planning applications or allocated land during the operation of the Scheme. There is no land take from any development land, and this has been assessed as having no effect. This results in a **negligible effect**, which is not considered significant.

Combined Effects on Receptors

12.8.58 The assessment has been undertaken for the Scheme as a whole, and therefore, the effects defined above already take into account the in-combination effects. There are no combined effects on receptors related to socio-economic effects in the operational phase.

12.8.59 The operational effects (pre-mitigation) are listed in **Table 12-30.**

Table 12-30: Summary of Magnitude of Impact and Significance of Effect for the Scheme

Receptor	Sensitivity (Value)	Description of Impact	Magnitude of Impact	Effect Category	Significant effect (Yes / No)
Local economy	Low	Employment generation during the operational phase	Very low beneficial	**Minor beneficial**	**No**
Users of PRoWs	Low	Creation of new permissive paths during the operational phase	Medium beneficial	**Minor beneficial**	**No**
Agricultural Land Resource	Low	No loss of agricultural land resource below temporary solar farm.	Very low adverse	**Negligible**	**No**
Soil Resource	Medium	Extended fallow for soils on land within the temporary solar farm	Medium beneficial	**Moderate beneficial**	**Yes**
Farming Circumstances	Low	Agricultural land use will change from intensive arable to livestock grazing with diversified enterprise of renewable generation for duration of solar farm.	Medium beneficial	**Minor beneficial**	**No**

Receptor	Sensitivity (Value)	Description of Impact	Magnitude of Impact	Effect Category	Significant effect (Yes / No)
Local amenities and land use – Residential Properties, Business Properties and Community Facilities	Variable by type	Impacts on residential properties, business premises and community facilities during the operational phase	No effect	**Negligible**	**No**
Local amenities and land use – Development Land	Variable by use	Land take of development land affecting viability for future development of the land allocation	No effect	**Negligible**	**No**

Decommissioning (no earlier than 2065)

Employment during Decommissioning (temporary medium-term)

12.8.60 A Framework DEMP is included in **Appendix 16E** of this Environmental Statement **[EN010106/APP/6.2]** and will be updated prior to the decommissioning phase, as outlined in **Chapter 3: Scheme Description** of this Environmental Statement **[EN010106/APP/6.1]**. The approval of this Plan by the relevant planning authority and its implementation are secured by a requirement in Schedule 2 of the DCO.

12.8.61 The Scheme will be decommissioned after 40 years of operation. For the purposes of the ES the year of decommissioning is assumed to be not earlier than 2065. 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 Order limits.

12.8.62 The estimated duration of the decommissioning period is expected to be similar to that of the construction period of 24 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 Order limits.

12.8.63 It is estimated that there will be fewer workers needed during the decommissioning phase than construction, with an average of 139 staff per day. Therefore it is estimated that 139 gross Full-time Equivalent (FTE) jobs will be generated on-site per day during this decommissioning period.

Net Construction Employment

12.8.64 **Table 12-31** presents the temporary employment generated by the Scheme identified above, accounting for leakage, displacement and multiplier effects as identified in the above section on the construction period. The Scheme will support, on average, 242 total net jobs per annum during the decommissioning period. Of these, 212 jobs per annum will be expected to be taken-up by residents within the study area, whilst the remaining 30 jobs will likely be taken-up by workers living outside the region.

Table 12-31: Net additional decommissioning employment per annum from the Scheme

	Study Area	Outside Study Area	Total
Gross Direct Employment	122	17	139
Displacement	-31	-4	-35
Net Direct Employment	91	13	104

	Study Area	Outside Study Area	Total
Indirect & Induced Employment	121	17	138
Total Net Employment[6]	**212**	**30**	**242**

Source: AECOM Calculations 2021

12.8.65 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 local economy. The study area currently has around 4,900 workers in its construction sector (Ref 12-5).

12.8.66 The impact of decommissioning employment generation on the local economy has been assessed as temporary medium beneficial, which results in a medium-term temporary **moderate beneficial** effect. This is considered significant.

Employment loss during Decommissioning (permanent long-term)

12.8.67 It can be expected that if the Scheme is shut down and all infrastructure is removed, the employment generated within the local economy during the operational phase will no longer be generated at this point. Therefore, the reversal of the previous effect assessed during the operational phase would occur. These workers can be expected to be integrated into the economy and find new employment after the loss of their job at the Scheme.

12.8.68 The impact of employment loss on 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

12.8.69 Changes to journey times, local travel patterns, and certainty of routes for users would arise from the temporary closures and diversions of PRoWs in and around the Sites. Effects during decommissioning on relevant routes are set out in the following paragraphs for each Site and are shown in Figure 12-4.

12.8.70 All closures of PRoWs will be avoided as far as possible. If closure of routes is required then as a worst-case scenario it is assumed the PRoW will be closed for up to three weeks within the Sites. It is however not anticipated that any PRoW closures will be required along the cable route because the cable route will remain in situ following decommissioning.

Sunnica East Site A

12.8.71 Temporary disruption to users making local journeys on bridleways W-257/007/0, W-257/002/X, and W-257/002/0 between Freckenham and

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

Isleham would be experienced due to these conjoining routes being temporarily severed, preventing access. This could be for up to a maximum of three weeks. Although in the added presence of traffic, users would be able to use an alternative route via Beck Road (approximately 1km in additional journey length), to complete their journeys. The users will no longer have access to the permissive route created during the operation phase. Impacts arising from these affected routes on user journeys are assessed to be temporary high adverse and the effect on users is assessed to be temporary **moderate adverse** effect. This is considered significant.

Sunnica East Site B

12.8.72 Temporary disruption to users making local journeys on the unclassified bridleway (U6006) which cuts diagonally from Worlington to Elms Road would be experienced due to the entire route being temporarily severed, preventing access. Although in the added presence of traffic, users would be able to use an alternative route via Freckenham Road (approximately 1.8km in additional journey length), to complete their journeys. The impacts arising from this on user journeys are assessed to be temporary medium adverse, and the effect on users is assessed to be temporary **minor adverse** effect. This is not considered significant.

12.8.73 To the south of the Site is footpath W-257/003/0 where temporary disruption to users making local journeys on this footpath between Freckenham and Red Lodge would be experienced due to this route being temporarily severed within the cable corridor only, preventing access. Users would be able to use an alternative route via Mildenhall Road (approximately 1.2km in additional journey length), to complete their journeys. Impacts arising from this on user journeys are assessed to be temporary medium adverse, and the effect on users is assessed to be temporary **minor adverse** effect. This is not considered significant.

12.8.74 Disruption will be experienced by users making local journeys on the two new permissive routes to the north-east of the Site, south of Freckenham Road, due to the entire routes not guaranteed to be retained during and after the decommissioning phase, preventing access. Although in the added presence of traffic, users would be able to use an alternative route via Freckenham Road (approximately 500m in additional journey length), to complete their journeys. The impact arising from this on user journeys are assessed to be permanent medium adverse, and the effect on users is assessed to be a **minor adverse effect**. This is not considered significant.

12.8.75 To the south of the Site on Elms Road there will be disruption experienced by users making local journeys on the new permissive route intersecting the existing diagonal permissive bridleway, due to the routes not guaranteed to be retained during and after the decommissioning phase. Although in the added presence of traffic, users would be able to use an alternative route via Elms Road (approximately 500m in additional journey length), to complete their journeys. The impacts arising from this on user journeys are assessed to be permanent medium adverse and the effect on users is assessed to be a **minor adverse effect**. This is not considered significant.

Sunnica West Site A

12.8.76 There are no PRoWs adjacent or within the Site and therefore there are no expected effects during the decommissioning phase.

Sunnica West Site B

12.8.77 There are no PRoWs adjacent or within the Site and therefore there are no expected effects during the decommissioning phase.

Agricultural Land and Soil

Agricultural Land Resource

12.8.78 Decommissioning work at the Sites will result in the suspension of grazing management of the land. The land resource will not however be lost or degraded. The magnitude of change will therefore be very low with the sensitivity of the receptor (agricultural land containing some Grade 3a but mostly Grades 3b and 4) being low. This results in a **negligible effect** which is not considered significant.

Soil Resources

12.8.79 Decommissioning work will involve little displacement of soil material, the dominant impact being the trafficking over land with transport and construction vehicles. In this regard, construction activity will be similar to the return to arable land use, with trafficking over the land by heavy farm machinery. The soil resource will however have benefitted from a recovery of soil organic matter over the 40 year duration of the Scheme, improving the robustness of the soil structure to trafficking. The magnitude of change is therefore very low, and the sensitivity of the light textured soil is low. This results in a **negligible effect** which is not considered significant.

Farming Circumstances

12.8.80 Decommissioning of the Scheme will mark the end of the temporary diversified enterprise for the landowners of the Sites. Agricultural occupants will be able to return to arable management with a mix of cropping appropriate to water availability, environmental policy and market prices at that time. The overall magnitude of change is low adverse and the sensitivity of the occupying farm business is low. The decommissioning effect on farming circumstances is therefore **negligible** and classed as not significant.

Combined Effects on Receptors

12.8.81 As for construction, there are no additional combined effects on receptors from decommissioning on farming circumstances or agriculture and soil.

Local Amenities and Land use

Residential Properties, Business Properties, and Community Facilities

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

12.8.83 Taking into account the results of the noise, air quality, visual and transport assessments, there are no residents, community facilities or businesses that would likely experience a significant effect on their amenity during decommissioning. Therefore, there are no effects arising from the Scheme on local amenities during decommissioning which results in a **negligible effect**, and which is not considered significant.

Development Land

12.8.84 Given the likelihood that in 40 years all currently known planning applications would have been implemented and that Local Plan allocations cannot be known with any certainty as they lie beyond the current Local Plan timeframe, there are anticipated to be no effects on development land.

12.8.85 Therefore, there are no effects arising from the Scheme on local development land during decommissioning which results in a **negligible effect**, and which is not considered significant.

12.8.86 The decommissioning effects (pre-mitigation) are listed in **Table 12-32.**

Table 12-32: Summary of Magnitude of Impact and Significance of Effect for the Scheme

Receptor	Sensitivity (Value)	Description of Impact	Magnitude of Impact	Effect Category	Significant effect (Yes / No)
Local economy of the 45 minute travel area	Medium	Employment generation during the temporary decommissioning phase	Medium beneficial	**Moderate beneficial**	**Yes**
Local economy of the 45 minute travel area	Low	Employment loss during the permanent decommissioning phase	Very low adverse	**Negligible**	**No**
Users of PRoWs W-257/007/0, W-257/002/X, and W-257/002/0	Low	Impacts on PRoW users during the decommissioning phase	High adverse	**Moderate adverse**	**Yes**
Users of other PRoWs	Low	Impacts on PRoW users during the decommissioning phase	Low to medium adverse	**Minor adverse /Negligible effect**	**No**
Agricultural Land Resource	Low	No loss of agricultural land resource	Very low adverse	**Negligible**	**No**
Soil Resource	Low	Construction traffic over land.	Very low adverse	**Negligible**	**No**
Farming Circumstances	Low	End of temporary diversified enterprise	Low adverse	**Negligible**	**No**

Receptor	Sensitivity (Value)	Description of Impact	Magnitude of Impact	Effect Category	Significant effect (Yes / No)
Local amenities and land use – Residential Properties, Business Premises and Community Facilities	Variable by type	Impacts on residential properties, business premises and community facilities during the construction phase	No effect	**Negligible**	**No**
Local amenities and land use – Development Land	Variable by type	Impacts on planned or proposed developments	No effect	**Negligible**	**No**

12.9 Additional Monitoring, Mitigation and Enhancement Measures

12.9.1 Temporary significant adverse residual effects have been assessed on users of two PRoWs during both the construction and decommissioning phases of the Scheme. No further mitigation is proposed beyond those measures outlined in **Table 12-33** and **Table 12-35** below, which states that the temporary closures will be supported by appropriate and clearly signed existing alternative routes and where possible will be planned and programmed to minimise disruption to users. This is secured in the CEMP.

12.9.2 This assessment has concluded that there will be no other potential significant adverse socio-economic effects during the construction, operational or decommissioning phases of the Scheme and therefore no additional mitigation measures are required.

12.9.3 No other additional mitigation measures, over and above those stated in the other technical chapters are required to avoid or minimise the socio-economic effects identified in this chapter.

12.9.4 To help maximise the positive gain for the local economy from the beneficial significant effect arising from employment generation during the construction phase, a Skills, Supply Chain and Employment Plan will be implemented. An Outline Skills Supply Chain and Employment Plan is included as part of the DCO Application **[EN010106/APP/7.8]**. The approval of the finalised Plan by the relevant planning authority, and its implementation, is secured by a Requirement in Schedule 2 of the DCO.

12.10 Residual Effects

12.10.1 This section summarises the residual significant effects of the Scheme on socio-economic and land use following the implementation of mitigation.

12.10.2 Significant residual effects are defined as moderate or major adverse or beneficial are listed in the following tables below:

a. **Table 12-33** (construction);

b. **Table 12-34** (operation); and

c. **Table 12-35** (decommissioning).

12.10.3 The construction phase residual effects are due to the employment generated during the construction of the Scheme and the temporary closures of PRoW which will impact users in the vicinity of the Order limits.

12.10.4 There is anticipated to be a significant impact on soil resource during the operational phase where the 40-year fallow will be beneficial to the soil. There are no significant socio-economic residual effects in the operation phase, shown in **Table 12-34**, as the employment generated during the operation phase is considered minor beneficial. 17 permanent jobs will be created to operate the Scheme as well as additional part-time employment for occasional maintenance works. The Scheme will also include four new

permissive rights of ways expected to have a permanent minor beneficial effect on users, during the operation phase.

12.10.5 The decommissioning phase residual effects for socio-economics are expected to be similar to those during the construction phase; generating temporary employment in the local economy to remove the solar panels and creating a temporary adverse effect when the PRoWs are closed. All socio-economics and land use effects (significant and not significant) for the above phases are set out in the tables below. **Table 12-33** outlines the likely residual construction effects after mitigation.

Table 12-33: Summary of Residual Effects (Construction)

Receptor	Description of impact	Significance of effect without mitigation	Mitigation/Enhancement measure	Residual effect after mitigation
Local economy	Employment generation during the construction phase	***Moderate beneficial*** ***Significant***	*Implementation of a Skills, Supply Chain and Employment Plan to maximise the benefits of employment generation for the local economy. An Outline Skills Supply Chain and Employment Plan is included as part of the DCO Application* ***[EN010106/APP/7.8]****. The approval of the finalised Plan by the relevant planning authority, and its implementation, are secured by a requirement in Schedule 2 of the DCO.*	***Moderate beneficial*** ***Significant***
Local economy	GVA generation during the construction phase	***Moderate beneficial*** ***Significant***	*N/A*	***Moderate beneficial*** ***Significant***
Agricultural Land Resource	No loss of agricultural land resource	***Negligible*** ***Not Significant***	*N/A*	***Negligible*** ***Not Significant***
Soil Resources	Trafficking over land by construction vehicles.	***Negligible*** ***Not Significant***	*Soil Management Plan providing guidance on handling of soil material and establishing green cover, specific to the soil resource present.*	***Negligible*** ***Not Significant***
Farming Circumstances	Suspension of Arable land management	***Negligible*** ***Not Significant***	*N/A*	***Negligible*** ***Not Significant***

Receptor	Description of impact	Significance of effect without mitigation	Mitigation/Enhancement measure	Residual effect after mitigation
Users of PRoWs	Impacts on PRoWs during the construction phase.	***Moderate adverse to Negligible effect*** ***Significant / Not Significant***	*The temporary closures where possible will be planned and programmed to minimise disruption to users. This will be secured in the CEMP.*	***Moderate adverse to Negligible effect*** ***Significant / Not Significant***
Local amenities and land use – Residential Properties, Business Premises and Community Facilities	Impacts on residential properties, business premises and community facilities during the operational phase	***Negligible effect*** ***Not Significant***	*N/A*	***Negligible effect*** ***Not Significant***
Local amenities and land use – Development Land	Potential land take of development land affecting viability for future development of the land allocation	***Negligible effect*** ***Not significant***	N/A	***Negligible effect*** ***Not Significant***

12.10.6 **Table 12-34** outlines the likely residual operation effects after mitigation.

Table 12-34: Summary of Residual Effects (Operation)

Receptor	Description of impact	Significance of effect without mitigation	Mitigation/Enhancement measure	Residual effect after mitigation
Local economy	Employment generation during the operational phase	***Minor beneficial*** ***Not Significant***	*N/A*	***Minor beneficial*** ***Not Significant***
Agricultural Land Resource	No loss of agricultural land resource	***Negligible*** ***Not Significant***	*N/A*	***Negligible*** ***Not Significant***
Soil Resource	Extended fallow for soils from intensive arable land	***Moderate beneficial*** ***Significant***	*N/A*	***Moderate beneficial*** ***Significant***
Farming Circumstances	Diversified enterprise of renewable energy generation with livestock grazing	***Minor beneficial*** ***Not Significant***	*N/A*	***Minor beneficial*** ***Not Significant***
Users of PRoWs	Impacts on PRoWs during the operational phase	***Minor beneficial*** ***Not Significant***	*N/A*	***Minor beneficial effect*** ***Not Significant***
Local amenities and land use – Residential Properties, Business Premises and Community Facilities	Impacts on residential properties, business premises and community facilities during the operational phase	***Negligible effect*** ***Not Significant***	*N/A*	***Negligible effect*** ***Not Significant***

Receptor	Description of impact	Significance of effect without mitigation	Mitigation/Enhancement measure	Residual effect after mitigation
Local amenities and land use – Development Land	Potential land take of development land affecting viability for future development of the land allocation	***Negligible*** ***Not significant***	N/A	***Negligible effect*** ***Not Significant***

12.10.7 **Table 12-35** outlines the likely residual decommissioning effects after mitigation.

Table 12-35: Summary of Residual Effects (Decommissioning)

Receptor	Description of impact	Significance of effect without mitigation	Mitigation/Enhancement measure	Residual effect after mitigation
Local economy	Temporary employment generation during the decommissioning phase	***Moderate beneficial*** ***Significant***	*N/A*	***Moderate beneficial*** ***Significant***
Local economy	Permanent employment loss during the decommissioning phase	***Negligible effect*** ***Not Significant***	*N/A*	***Negligible effect*** ***Not Significant***
Agricultural Land Resource	No loss of agricultural land resource	***Negligible*** ***Not significant***	*N/A*	***Negligible effect*** ***Not significant***
Soil Resource	trafficking over land by construction vehicles	***Negligible*** ***Not significant***	*Soil Management Plan providing guidance on handling of soil material, specific to the soil resource present.*	***Negligible effect*** ***Not significant***
Farming Circumstances	End of Temporary Diversified Enterprise	***Negligible*** ***Not significant***	*N/A*	***Negligible effect*** ***Not significant***
Users of PRoWs	Impacts on PRoWs during the decommissioning phase	***Moderate adverse to Negligible effect*** ***Significant / Not Significant***	*The temporary closures will where possible will be planned and programmed to minimise disruption to users. This will be secured in a Decommissioning Environmental Management Plan.*	***Moderate adverse to Negligible effect*** ***Significant / Not Significant***

Receptor	Description of impact	Significance of effect without mitigation	Mitigation/Enhancement measure	Residual effect after mitigation
Local amenities and land use – Residential Properties, Business Premises and Community Facilities	Impacts on residential properties, business premises and community facilities during the operational phase	***Negligible effect*** ***Not Significant***	*N/A*	***Negligible effect*** ***Not Significant***
Local amenities and land use – Development Land	Potential land take of development land affecting viability for future development of the land allocation	***Negligible*** ***Not significant***	N/A	***Negligible effect*** ***Not Significant***

12.11 Cumulative Effects

12.11.1 This section of the chapter assesses the potential effects of the Scheme in combination with the potential effects of other development schemes (referred to as 'cumulative schemes') within the surrounding area, as listed within **Chapter 5: EIA Methodology** of this Environmental Statement **[EN010106/APP/6.1]**. The existing developments within the Order limits have already been considered to form the baseline of the assessment and therefore do not require assessment here.

Construction

12.11.2 All the approved cumulative schemes and submitted applications listed in **Chapter 5: EIA Methodology** of this Environmental Statement **[EN010106/APP/6.1]** will generate additional construction-related employment demand either in the study area or in the surrounding areas to the study area if they were to go ahead. The scale of the construction employment demand generated cannot be readily quantified based on the information available for each scheme as this information is commercially sensitive and not available.

12.11.3 The combined effect of the construction of the cumulative developments is likely to bring considerable additional employment to the local economy. Although this is expected to result in an increase in construction employment, the overall cumulative effect from the generation of construction workers is likely to remain as temporary medium beneficial effect on the economy of the study area, resulting in a temporary **moderate beneficial** effect which is considered significant.

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

12.11.5 The overall cumulative effect on PRoWs is likely to remain temporary medium adverse as there are limited cumulative schemes adjacent to the Scheme or in close proximity, only the pre-application stage Potable Water Pipeline. Though the route of the pipeline is known, it is at an early planning stage so its impact on PRoWs is likely to result in not greater effects than the temporary medium adverse already assessed, with the Potable Water Pipeline not crossing any PRoWs impacted by Proposed Scheme (though the Potable Water Pipeline's full red line boundary is not known at this stage). The next closest cumulative schemes are 50m south from the Burwell National Grid Substation Extension which will not impact any PRoW, let alone those located within the Scheme. Therefore, the overall cumulative assessment PRoW and land use remains **moderate adverse**[7] **/ minor adverse/ negligible effect**, which is considered significant in respect of the moderate adverse effect conclusion only.

[7] The moderate adverse effect would be on users making local journeys on bridleways W-257/007/0, W-257/002/X, W-257/002/0 between Freckenham and Isleham.

12.11.6 The overall cumulative effect on residential properties, business premises and community facilities is likely to remain as a **negligible effect**, which is not significant as there are no cumulative schemes adjacent to the Scheme or in close proximity.

12.11.7 Unlike built development, consent for a solar farm is temporary with little or no loss of agricultural land or the soil resource. With no loss of agricultural land or the soil resource associated with it, there is therefore no cumulative construction effect for soil and agricultural land resource. The brief period of construction is unlikely to interrupt agricultural management for more than one growing season, limiting any opportunity to cause any significant farming circumstances cumulative effects with other developments.

Operation

12.11.8 In relation to development land, if all the schemes are to be realised there will be considerable additional employment demand from some of the cumulative schemes offering new offices, retail and commercial space. Most cumulative schemes, however, will not generate considerable operational employment due to their nature as infrastructure or utilities projects or as purely residential-led development projects. Therefore, the overall combined cumulative effect from the generation of workers during operation is likely to remain permanent low beneficial, resulting in a permanent **negligible effect** which is not considered significant.

12.11.9 The overall cumulative effects on PRoWs during the operational phase will remain as minor beneficial as there are no cumulative schemes adjacent to or in close proximity to the Scheme, resulting in a permanent **minor beneficial effect**, which is not considered significant.

12.11.10 The overall cumulative effect on residential properties, business premises and community facilities is likely to remain as a negligible effect, which is not significant as there are no cumulative schemes adjacent to the Scheme or in close proximity.

12.11.11 The use of agricultural land in the other schemes by specialist agricultural contractors for rotations of crops is not known. Development of arable land will reduce the extent of land available for high margin crops, such as potatoes, carrots and onions. However, the dominant limiting factor on the area of such cropping is not suitable land but the volume of irrigation water available. Therefore, the freeing up of abstraction licence volume from this Scheme and any other realised schemes will act to negate the reduction in currently used land area. Rotations of irrigated crops can be increased on the remaining agricultural land at the expense of rain fed arable crops such as wheat. All such decisions will of course be subject to market prices for cereals, potato and vegetables. Cumulative operation effects on farm businesses is therefore a temporary **negligible effect** which is not considered significant. Details of the individual farm businesses with land within the Sites are given in **Appendix 12B** of this Environmental Statement **[EN010106/APP/6.2]**.

Decommissioning

12.11.12 The cumulative schemes do not affect the employment effects during decommissioning of the Scheme. Therefore, the effect for medium term job creation remains as a **moderate beneficial temporary effect**, which is considered significant. The permanent loss of employment on the Order limits will also remain as a **negligible effect**, which is not considered significant.

12.11.13 The overall cumulative effect on PRoW is likely to remain temporary medium adverse as there are no cumulative schemes adjacent to the Scheme or in close proximity. It is unclear which, if any, PRoW could be impacted by the Potable Water Pipeline (currently at pre-application stage). The closest two cumulative schemes are 50m south from the Burwell National Grid Substation Extension which will not impact any PRoW, let alone those located within the Scheme. Therefore, the overall cumulative assessment on PRoW and land use remains **moderate adverse[8] / minor adverse / negligible effect**, which is considered significant in the moderate adverse instance.

12.11.14 The overall cumulative effects arising during commissioning on residential properties, business premises and community facilities are likely to remain as **negligible effects**, which are not significant as there are no cumulative schemes adjacent to the Scheme or in close proximity.

12.11.15 Following decommissioning, the land within the Sites can return to arable management subject to the market conditions and agricultural support policy at that time. There is therefore no cumulative decommissioning effect for soil and agricultural land resource.

12.11.16 As for construction, decommissioning work is unlikely to interrupt agricultural management for more than one growing season, limiting any opportunity to cause any significant farming circumstances cumulative effects with other developments.

[8] The moderate adverse effect would be on users making local journeys on bridleways W-257/007/0, W-257/002/X, and W-257/002/0 between Freckenham and Isleham.

12.12 References

Ref 12-1 Homes and Communities Agency (HCA), (2014); Additionality Guide: A Standard Approach to Assessing the Additional Effect of Projects: 4th Edition, HCA.

Ref 12-2 Office of National Statistics (ONS), (2019); Mid-Year Population Estimates 2018. ONS.

Ref 12-3 Office of National Statistics (ONS), (2020); Annual Population Survey (January 2019-December 2019). ONS.

Ref 12-4 Ministry of Housing, Community and Local Government (MHCLG), (2019); Indices of Multiple Deprivation. MHCLG.

Ref 12-5 Office of National Statistics (ONS), (2019); Business Register and Employment Survey. ONS.

Ref 12-6 Natural England 'Technical Information Note 049 – Agricultural Land: protecting the best and most versatile agricultural land (TIN049)

Ref 12-7 Department of Environmental, Food, and Rural Affairs (Defra), (2021); MAGIC (Multi-Agency Geographic Information for the Countryside). Defra.

Ref 12-8 Office of National Statistics (ONS), (2015); Census 2011. ONS.

Ref 12-9 Solar powered growth in the UK – the macroeconomic benefits for the UK of investment in solar PV: CEBR (report for the Solar Trade Association), September 2014.

Ref 12-10 Office of National Statistics (ONS), (2016); Gross Value Added (Income Approach) 2015. ONS