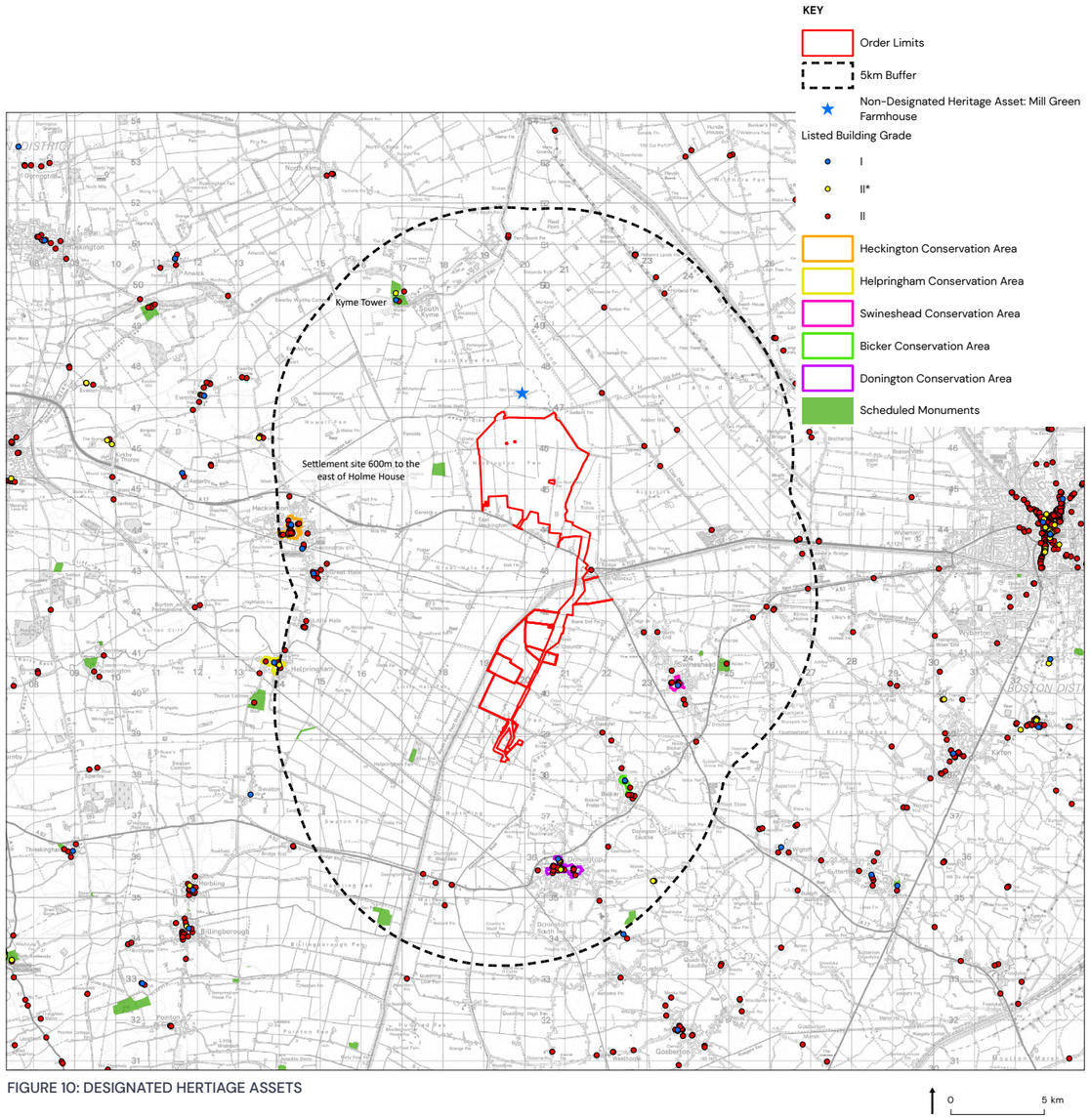


FIGURE 10: DESIGNATED HERTIAGE ASSETS



residual effects is likely to be minor, which would not be considered significant in EIA terms.

## MITIGATION AND ENHANCEMENT

The derelict cottages and barn of Six Hundreds Farm, the low boundary wall at Elm Grange, and the former drainage pump at Head Dike will be retained as part of the Proposed Development.

Six areas within the Energy Park that preserve the densest and most extensive evidence of Roman salt-working and agricultural activity will be subject to a mitigation strategy of strip map sample excavation (and follow-on mitigation as appropriate) to preserve the buried archaeological resource by record prior to its destruction through construction and decommissioning activities. The residual effect is minor harm to its heritage value.

Planting along the northern boundary of the Energy Park and the Head Dike will help screen visibility of the Proposed Development in designed views from (non-Listed) Mill Green Farmhouse, and accordingly reduce the level of minor harm to its heritage value.

## CUMULATIVE AND IN-COMBINATION EFFECTS

None of the identified cumulative schemes would have an effect on the archaeological or built heritage resource of the land being considered for the Proposed Development. Further, the heritage assets considered sensitive to the Proposed Development through change to setting lie outside the zone of influence with the identified cumulative schemes.

No cumulative effects are anticipated to result from the Proposed Development in respect of cultural heritage.

No in-combination effects are anticipated to result from the Proposed Development in respect of cultural heritage.

## CONCLUSION

This chapter of the ES (document reference 6.1.10) has identified **no significant residual effects** in respect of cultural heritage assets (above and below ground) that would arise from a development of the nature and on the scale proposed.

# SOCIO-ECONOMIC

The Socio-Economic Chapter of the ES (document reference 6.1.11) has analysed the baseline socio-economic conditions and then gone on to assess the likely socio-economic effects of the Proposed Development.

## BASELINE CONDITIONS

North Kesteven experienced population growth of 8.8% between 2011 and 2021 (9,557 additional people), and in Boston there was a relatively higher population growth of 9.1% (5,888 additional people). Relative to the benchmark areas of East Midlands and Great Britain, North Kesteven and Boston's population grew at a faster rate over this timeframe. Employment growth in North Kesteven over the last five years has been strong with 10.3% increase in job numbers, especially when compared to the picture at a regional and national level (5.4% and 5.2% respectively). Boston's employment growth was 3% in that same period. The construction sector, which is likely to see increased employment opportunities during the Proposed Development's build phase represents 7% of total employment in the District, which is above the proportion of total jobs at the regional scale (4.9%) and Great Britain (5%). North Kesteven has a net outflow of commuters, while Boston has a net inflow of commuters. The claimant count (the number of people claiming unemployment related benefits) in Boston has risen by 1.7% in the period January 2020 to September 2022 and is currently above all other comparator areas. The claimant count in North Kesteven increased but only by 0.3% in this period from 1.7% to 2.0% and is well below all other comparator areas as well as Boston.

## ASSESSMENT OF POTENTIAL FOR LIKELY SIGNIFICANT EFFECTS

In respect of the construction phase, the assessment indicates that the Proposed Development will have the following temporary effects:

- 4360~~0~~ peak on-site construction jobs generated, with an average of 150 on-site construction jobs, over the 30-month construction programme with an estimated peak of 109.
- £182.97~~5~~million of gross value added over the 30-month construction programme.
- Increase (up to 2180~~0~~ construction workers) in demand on Serviced and Non-Serviced Accommodation in North Kesteven.

In respect of the operational phase, the assessment indicates that the Proposed Development will have the following effects:

- 5 direct additional jobs in the North Kesteven and Boston economy.
- £627,000 of gross value added per annum or £13.9million over 40-year lifespan of the project (when compared to present value).
- Business rates £1.3million per annum and £29.3million over the 40-year project lifespan (when compared to present value).
- In respect of the decommissioning phase, the assessment indicates that the Proposed Development will have the following temporary effects:
- 200 peak on-site construction jobs over the 18-month decommissioning programme.
- £52.5million of gross value added over the 18-month decommissioning programme.
- Increase (up to 100 construction) in demand on Serviced and Non-Serviced Accommodation in North Kesteven.

Overall, there are beneficial effects in terms of employment, economic contribution, and business rates in all relevant phases of development. Notably, beneficial economic contribution effects are considered to be significant in the construction and decommissioning phases, and beneficial business rates effects are considered to be significant in the operational phase. Effects relating to accommodation demands in the construction and decommissioning phases are adverse but not significant in EIA terms.

## MITIGATION AND ENHANCEMENT

Most effects of the Proposed Development are beneficial, and therefore no mitigation is required. The accommodation demand effects as a result of the construction and decommissioning phase of the Proposed Development are adverse but not significant in EIA terms and therefore do not require mitigation.

It is noted that, to maximise the beneficial impacts identified by the scheme, an Outline Supply Chain, Employment and Skills Plan (document reference 7.12) will be produced to optimise the number of local people who will have access to employment and training opportunities arising from the Proposed Development and will be secured by DCO requirement.

Wider benefits for the community will be undertaken separately and outside of the DCO process.

## CUMULATIVE AND IN-COMBINATION EFFECTS

As for the Proposed Development in isolation, there are likely to be beneficial effects in terms of employment, economic contribution, and business rates in all relevant phases of development. Similarly, significant beneficial economic contribution effects are predicted in the construction and decommissioning phases, and significant beneficial business rates effects are predicted in the operational phase. Effects relating to accommodation demands in the construction and decommissioning phases are adverse but not significant in EIA terms, with surplus bedspaces available in all 12 months of the year after factoring in the potential number of construction and decommissioning workers requiring accommodation during those build phases.

## CONCLUSION

The Proposed Development would lead to **no adverse residual significant effects** from a socio-economic perspective. The Proposed Development will result in beneficial effects in terms of employment, economic contribution, and business rates in all relevant phases of development, and adverse but not significant effects in EIA terms on accommodation demands in the construction and decommissioning phases.

An Outline Supply Chain, Employment and Skills Plan (document reference 7.12) will be produced to optimise the number of local people who will have access to employment and training opportunities arising from the Proposed Development and will be secured by DCO requirement. Continued efforts to address wider benefits for the community will be undertaken separately and outside of the DCO process.

# NOISE

The Noise Chapter of the ES (document reference 6.1.12) has considered the potential effects of noise and vibration associated with the Proposed Development, both associated with the different construction and decommissioning activities and traffic, as well as the operational phase.

## BASELINE CONDITIONS

The baseline conditions were determined from a combination of new survey work and reference to historical data captured at noise-sensitive receptors neighbouring the Energy Park, shown in **Figure 11**.

The baseline noise environment in the vicinity of the Energy Park site was observed to be generally rural in nature, with a range of natural noise sources (bird noise, wind in trees, etc.). Noise from agricultural activities will also represent a contribution at times given the nature of the area, although this may be for limited periods particularly during evening and night-time periods.

Traffic noise, in particular from the A17, also represents a notable influence in the area, which can be dominant for properties located in proximity to the A17, and more distant or minimal for others. As the water in the drains located in the area is generally not running, no audible water noise was noted during the surveys.

## ASSESSMENT OF POTENTIAL FOR LIKELY SIGNIFICANT EFFECTS

During construction the assessment has identified potential significant noise effects if trenchless work is required and remains active at night, depending on the final locations where this may be required along the grid connection route.

Noise and vibration from other construction activities may be audible or perceptible at times but the worst-case levels are such that, providing construction working hours are controlled in a standard manner, their effect would be either not significant or negligible. Construction traffic is associated with negligible effects.

Likely levels of operational noise from electrical or mechanical plant, in relation to the baseline noise environment and context of the area (during quieter periods of the evening and night), on the basis of worst-case assumptions, are such that no significant effects are expected.

## MITIGATION AND ENHANCEMENT

Construction working hours would be controlled for most noise-generating activities, and good practice measures would further reduce noise levels in practice.

The potential effects of horizontal directional drilling (HDD) trenchless construction if required for night-time work would be minimised and managed through the selection of the final drilling locations and liaison with the closest affected residents. Where these works are required in relative proximity to sensitive receptors, such that significant effects remain likely, the drilling will be interrupted at night where possible, or alternatively different trenchless techniques, screening, or offer of temporary re-housing (for the duration of these works) would be investigated. Residual effects would likely be minor at most following implementation of these measures.

Operational noise would be controlled to a set of proposed noise limits at the nearest noise-sensitive receptors through detailed design and selection of electrical/mechanical equipment, attenuation and/or screening measures. The residual effects would then be either not significant or negligible.

## CUMULATIVE AND IN-COMBINATION EFFECTS

No Cumulative or In-combination Effects of noise or vibration were identified.

## CONCLUSION

It is therefore concluded that the effects of the Proposed Development can be suitably controlled such that no significant adverse residual effects remain where reasonably practicable.

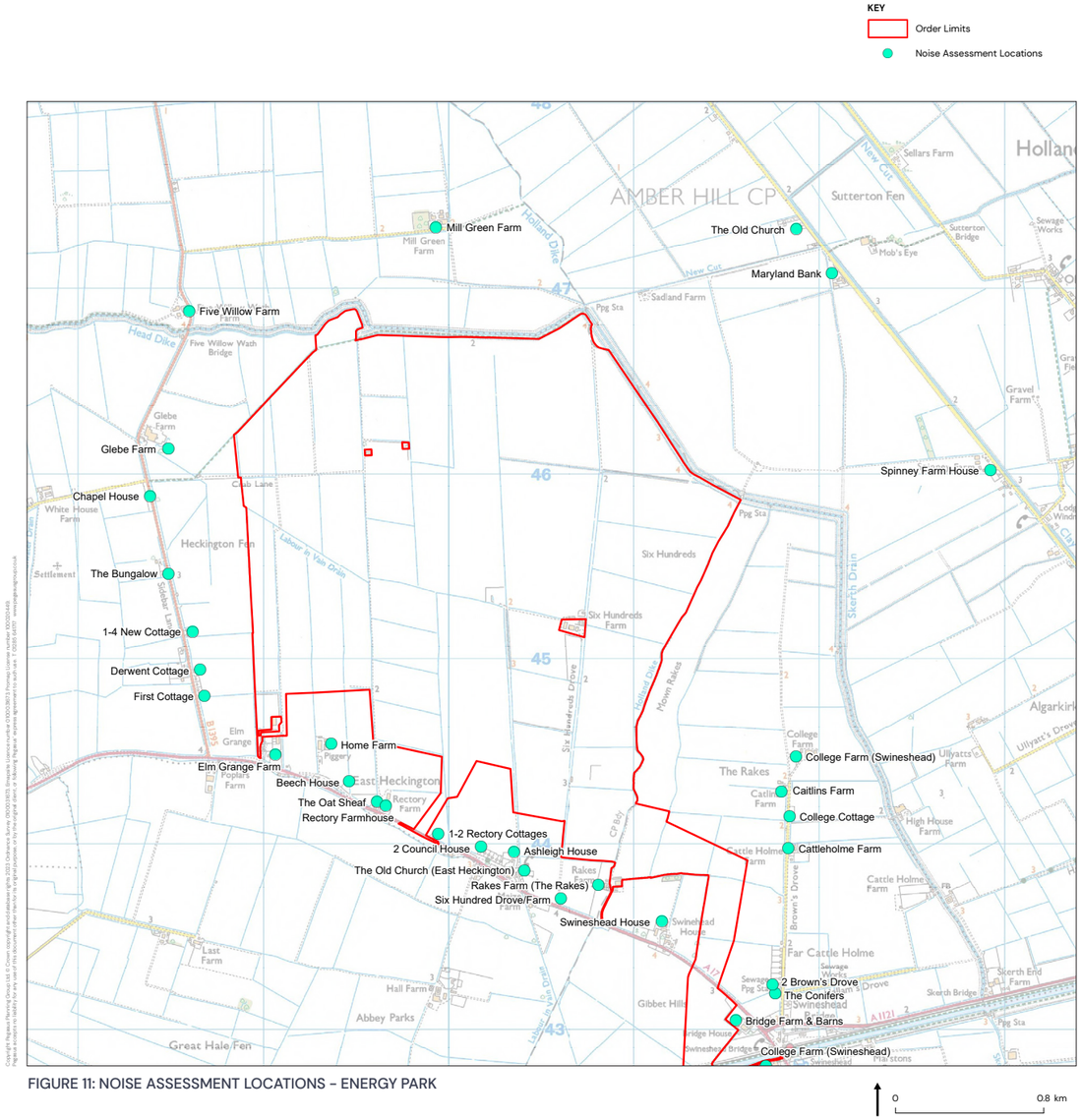


FIGURE 11: NOISE ASSESSMENT LOCATIONS – ENERGY PARK

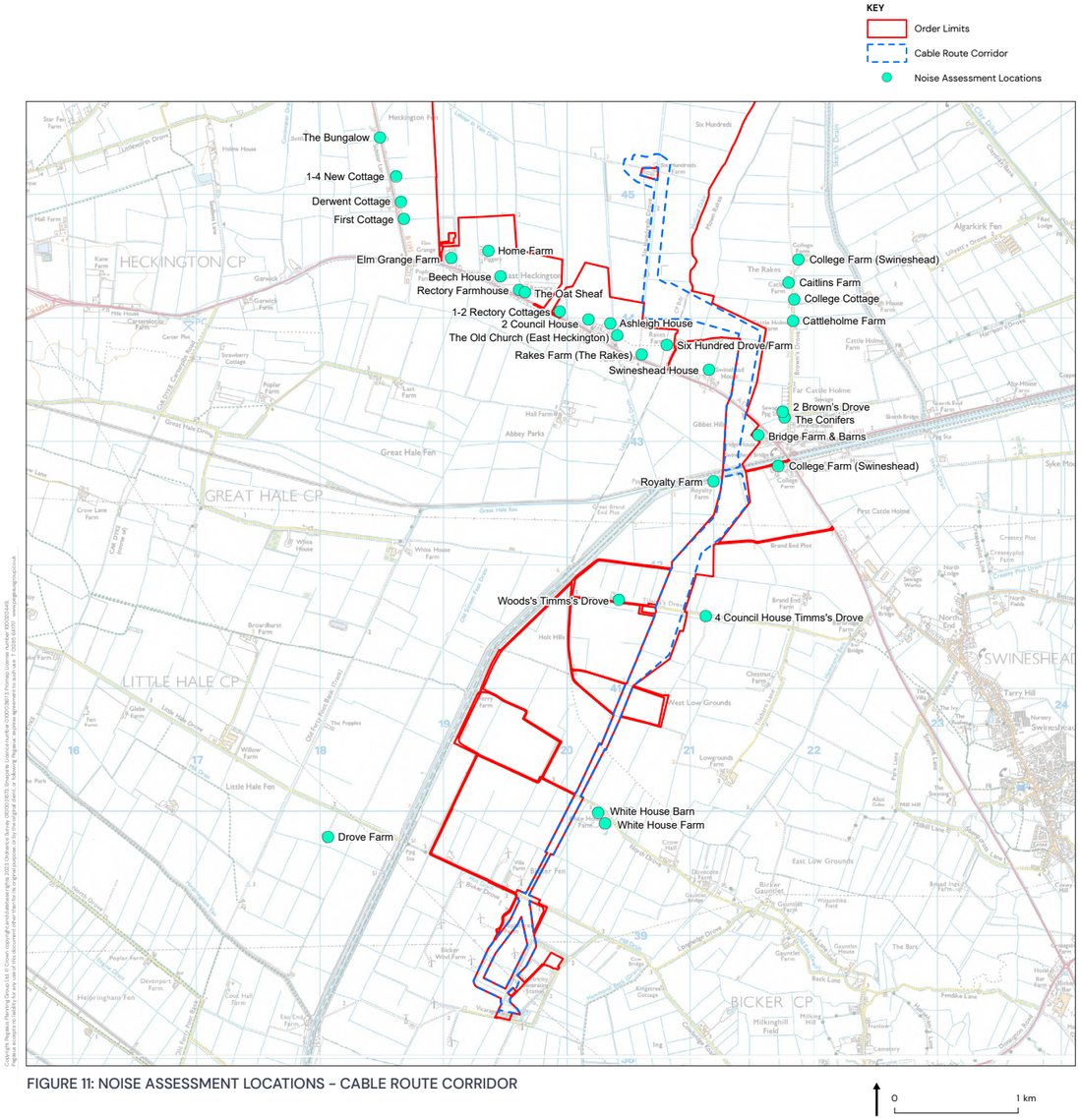


FIGURE 11: NOISE ASSESSMENT LOCATIONS – CABLE ROUTE CORRIDOR

# CLIMATE CHANGE – EMISSIONS REDUCTION

To reflect the requirements of the 2017 EIA Regulations, an assessment has been undertaken of the potential effects of the Proposed Development on greenhouse gas (GHG) emissions reduction, in accordance with recognised guidance.

## BASELINE CONDITIONS

The land within the Energy Park site consists mainly of agricultural land and trees. The baseline conditions include the existing carbon stock (e.g. carbon sequestered within vegetation present) and sources of GHG emissions (e.g. from agricultural vehicles and machinery) from the existing activities on-site. Whilst the growing of crops will sequester carbon in the short term for the duration of a growing cycle, this carbon would be subsequently released in a relatively short cycle during the agricultural practices of management, harvesting and consumption.

## ASSESSMENT OF POTENTIAL FOR LIKELY SIGNIFICANT EFFECTS

The greatest volume of GHG emissions during the construction phase is as a result of the embodied carbon in construction materials which accounts for over 96% of the total emissions. The remaining emissions relate to the transportation of materials, land use change, waste and workers. Total GHG emissions from the construction phase are estimated to equate to 27569,000 tCO2e, which when compared to applicable national carbon budgets, in line with accepted guidance, equates to an effect that is not significant.

The greatest volume of GHG emissions during the operational phase is as a result of maintenance activities, associated with embodied carbon and the transport of replacement parts and equipment, which account for 93.61% of the total emissions. Total operational GHG emissions equate to 316292,000 tCO2e over the 40-year design life. Emissions associated with the land use change from intensive arable to solar energy generation have been calculated on the basis of the carbon footprint that would arise from the necessary transport and import of food and crops from elsewhere, which could otherwise have been grown on this land.

The average operational GHG intensity of both the Proposed Development (including Energy Storage aspects) and just the Energy Park (excluding Energy Storage aspects) have been calculated by dividing the corresponding total operational GHG emissions (outlined above) by the total energy generation of the Energy Park. When considering the Proposed Development as a whole, this gives an average operational GHG intensity of 22.500.4 grams of $CO_2$ equivalent per kWh (gCO2e/kWh). This operational GHG intensity is well below the 2022 GHG intensity of the grid (136 gCO2e/kWh), as published by the Department for Business Energy and Industrial Strategy. When considering only the aspects relating to the solar energy generation from the Energy Park, this gives an average operational GHG intensity of 7.96.1 grams of $CO_2$ equivalent per kWh (gCO2e/kWh). Importantly, without low-carbon energy generation projects such as the Proposed Development, the average grid GHG intensity will not fully decrease as projected, which would also adversely affect the UK's ability to meet its carbon reduction targets. Therefore, the Proposed Development is considered to have a significant beneficial effect on emissions reductions during its operational phase.

GHG emissions from decommissioning activities are estimated to equate to 3,110080 tCO2e and are associated with the transportation of materials, waste and workers. Whilst these emissions cannot be compared to a relevant national carbon budget as these do not yet extend to cover the date of likely decommissioning, these are considerably lower than construction related emissions, and are considered to equate to an effect that is not significant.

## MITIGATION AND ENHANCEMENT

Whilst mitigation measures will be included such as designing to reduce waste and maximise the use of materials with lower embodied carbon, effects will remain as outlined above, i.e., not significant.

## CUMULATIVE AND IN-COMBINATION EFFECTS

When considering the generation capacities of other planned solar energy projects within Lincolnshire County Council area (where known), these collectively represent an estimated 2,050 MW of solar energy generation. This is also considered to have a significant beneficial effect on emissions reductions during their corresponding operational phases.

In-combination effects are considered below under 'climate change adaptation'.

## CONCLUSION

**No significant adverse residual effects** have been predicted with respect to GHG emissions during the construction and decommissioning phases. A **significant beneficial effect** has been predicted during the operational phase both for the Proposed Development in isolation and cumulatively.

# CLIMATE CHANGE – ADAPTATION

To reflect the requirements of the 2017 EIA Regulations, an assessment has been undertaken of the potential effects of the Proposed Development on climate change adaptation. In accordance with recognised guidance, this has included both the vulnerability of the Proposed Development to climate change and also any implications of climate change for the predicted effects of the project, as assessed by the other topic specialists ('in-combination climate effects').

## BASELINE CONDITIONS

Baseline conditions have been determined with respect to average maximum and minimum summer and winter temperatures, average summer and winter sunshine hours and average summer and winter wind speeds.

With respect to future baseline conditions, the assessment uses the UKCP18 climate projections for the 2080s which suggest that, in future, the Energy Park site and its surroundings will experience warmer, drier summers and milder wetter winters. Whilst heavy rain days are likely to increase throughout the year, there is still considerable uncertainty with respect to likely changes in both wind speed and storm frequency/ intensity. All other ES topic area authors were provided with a summary of the climate change projections and were asked to consider the relevance of this for their baseline descriptions. Whilst some possible changes were noted, it was not felt that baseline conditions would be materially altered to such an extent that this would need to be reflected in the subsequent assessments of effects.

## ASSESSMENT OF POTENTIAL FOR LIKELY SIGNIFICANT EFFECTS

With respect to the vulnerability of the Proposed Development, it is not considered that the project could be affected by climate change to such an extent that the construction and/or operation of the Proposed Development could potentially become unviable. Therefore, no significant adverse effects are predicted.

With respect to 'in-combination climate effects', the assessment considered the projected climate change projections in more detail in relation to landscape and visual amenity (operational phase), cultural heritage (construction phase) flooding and drainage (construction and operational phase), ecology (construction and operational phase) and noise (operational phase). No new significant effects were identified for these topic areas as a consequence of projected climate change.

## MITIGATION AND ENHANCEMENT

Whilst a number of mitigation measures will be included to ensure project resilience, effects will remain as outlined above.

No additional mitigation is required in relation to in-combination climate effects. Effects will remain as outlined above.

## CUMULATIVE AND IN-COMBINATION EFFECTS

With respect to climate change adaptation, this is a project specific consideration, namely the resilience of the project in question to climate change and the extent to which projected climate change could alter other predicted impact judgements. More widely, in relation to potential interactions with other developments, and following the same logic with respect to required compliance with regulatory standards and accepted good practice mitigation measures, no significant cumulative effects are anticipated.

## CONCLUSION

**No significant residual effects** have been predicted in relation to climate change adaptation, either for the Proposed Development in isolation or cumulatively.



# TRANSPORT AND ACCESS

The Transport and Access Chapter of the ES document reference 6.1.14) assesses the potential effects relating to transport and access. It considers the potential effects on vehicular traffic flows, accidents and safety, severance, driver delay, hazardous and dangerous loads and dust and dirt.

This chapter of the ES has been prepared alongside a supporting Outline Construction Traffic Management Plan (OCTMP) (document reference 7.10), this document secures the mitigation and provides traffic transport information relating to the construction phase of the Proposed Development.

## BASELINE CONDITIONS

The Energy Park site is located to the immediate north of the A17, approximately 3.7km to the east of Heckington and around 8.9km to the west of Boston.

Access to the Energy Park during the construction and operational phases is proposed with the A17 to the south of the Energy Park site, approximately 900m northwest of the junction with Six Hundreds Drove. Whilst the proposed new access is under construction, a temporary construction access will be provided via an existing junction with the A17, approximately 600m southeast of B1395 Sidebar Lane junction. The cable route within the Off-site Cable Route Corridor will be accessed using existing junctions with the A17.

Access for the construction of the cable route is proposed in three locations. Access from the north of the South Forty Foot Drain is proposed via an existing junction with the A17 located approximately 430m north of the junction with the A1121; and access to the south of the drain is proposed via the Triton Knoll access with the A17. Localised access is also proposed via Royalty Lane and Timms Drove. However, the Triton Knoll access will predominantly form the southern access.

Access to the Bicker Fen Substation is currently achieved via a haul road from the A52. This will not change as a result of the Proposed Development. Access for construction vehicles associated with the extension to the Substation will continue to access via the A52, in line with NGET's existing arrangements. From the haul road, vehicles will route via Ing Drove, Cowbridge Road, Bicker Drove and Vicarage Drove.

Baseline surveys from 2022 confirm that daily (24 hour) traffic flows past the Energy Park site on the A17 are up to around 21,307 vehicles with around 16 percent HGVs., on the A52 is 5,657 vehicles with around 9% HGVs, and data from 2023 confirms that the maximum daily traffic flows along the substation construction route (within the study area) are up to around 136 vehicles with around 3.7% HGVs. Data from the most recent five-year period show that there are not any existing highway safety issues on the local highway network that would be exacerbated by the Proposed Development.

## ASSESSMENT OF POTENTIAL FOR LIKELY SIGNIFICANT EFFECTS

Impact Magnitudes have been defined for the construction phase with regard to 'Guidelines for the Environmental Assessment of Road Traffic', which states that a significant environmental impact may occur when traffic flows increase by more than 10% where the study area is of high sensitivity significance. This has, for the purposes of this assessment, been considered to represent a negligible impact significance.

During construction of the Energy Park an estimated 107 Abnormal Indivisible Loads (AIL) (comprising seven movements for the substation transformers, and 100 crane movements) are anticipated, the deliveries will be planned with an AIL route assessment and will be escorted and managed along the route from the port of

entry into the UK and the site. With these measures in place no significant impacts are anticipated.

There will be an increase in vehicles using the local highway network during the construction period from both HGV movements and construction staff accessing the Energy Park site. The impact of the construction phase traffic for the Energy Park, the cable route and the National Grid Bicker Fen Substation Extension is considered to be of Negligible significance, and therefore in EIA terms is Not Significant.

The assessment of construction phase impacts has also taken into account accidents and safety, severance and driver delay which concluded no significant impacts in EIA terms are anticipated as a result of the Proposed Development.

Once the development is operation it is anticipated there will be around five visits to the Energy Park site per day for maintenance, this is considered to have a Negligible impact on the local highway network.

## MITIGATION AND ENHANCEMENT

Mitigation has been provided in the form of an OCTMP (document 7.10) to reduce the impacts of the construction phase. Mitigation measures detailed in this document include:

- A "left in – left out" arrangement at the permanent Energy Park site access;
- Provision of contractor's compound within the site, providing an area on site for HGV to park and manoeuvre;
- Arrival and departure of HGVs will be managed to ensure no HGVs are waiting on the public highway;
- Limited hours of site operation and the routing of construction traffic to protect local residential areas from construction traffic;
- Wheel washing facilities;
- It is envisaged that the construction working hours will generally be 08:00 – 18:00 Monday to Friday and 09:00 – 13:00 on Saturdays;
- Temporary signage in the vicinity of the Energy Park and cable route during construction; and
- The contact details of the contractor and those of the highway department at Lincolnshire County Council will be exchanged before commencement of works on site.

## CUMULATIVE AND IN-COMBINATION EFFECTS

The assessed cumulative sites are located some distance from the Energy Park site. Based on the temporary nature of the Site's construction phase and the insignificant changes in annual average daily traffic (AADT) flows, it is not considered necessary to assess the cumulative transport and access impacts. There are therefore no cumulative effects relating to transport and access that need to be considered.

## CONCLUSION

It is concluded that the proposed package of mitigation will ensure that the Proposed Development is acceptable and that there will be **no adverse significant residual effects**.

There are therefore no highways or transportation reasons which should prevent the Proposed Development.



# AIR QUALITY

The Air Quality Chapter of the ES (document reference 6.1.15) focuses on the potential air quality effects at existing sensitive receptors during the construction phase, shown in **Figure 12**.

## BASELINE CONDITIONS

The Proposed Development is not located within or near to an Air Quality Management Area (AQMA).

Monitored concentrations in the vicinity of the Proposed Development show pollutant concentrations have been below the Air Quality Objectives (AQO) for the last five years of representative monitoring data.

## ASSESSMENT OF POTENTIAL FOR LIKELY SIGNIFICANT EFFECTS

Predicted construction traffic flows have been screened against Environment Protection UK (EPUK) and Institute of Air Quality Management (IAQM) guidance and considered to be not significant.

In addition, dust and non-road mobile machinery emissions during the construction phase will be controlled via an Outline Construction Environmental Management Plan (CEMP) (document reference 7.7) and as such are considered to be negligible and therefore the effects are not significant.

Operational and decommissioning effects are likely to be minimal due to the small number of vehicle movements associated with the Energy Park and as at the time of decommissioning the baseline air quality conditions are anticipated to be much improved due to enhanced technology. As such these have not been considered further within the assessment.

## MITIGATION AND ENHANCEMENT

Construction phase emissions to air will be controlled by an Outline CEMP (document reference 7.7) and Outline Construction Traffic Management Plan (CTMP) (document reference 7.10).

## CUMULATIVE AND IN-COMBINATION EFFECTS

There are not expected to be any significant cumulative and in combination effects.

## CONCLUSION

It is concluded that the proposed package of mitigation will ensure that the Proposed Development is acceptable and that there will be **no adverse significant residual effects** to air quality.

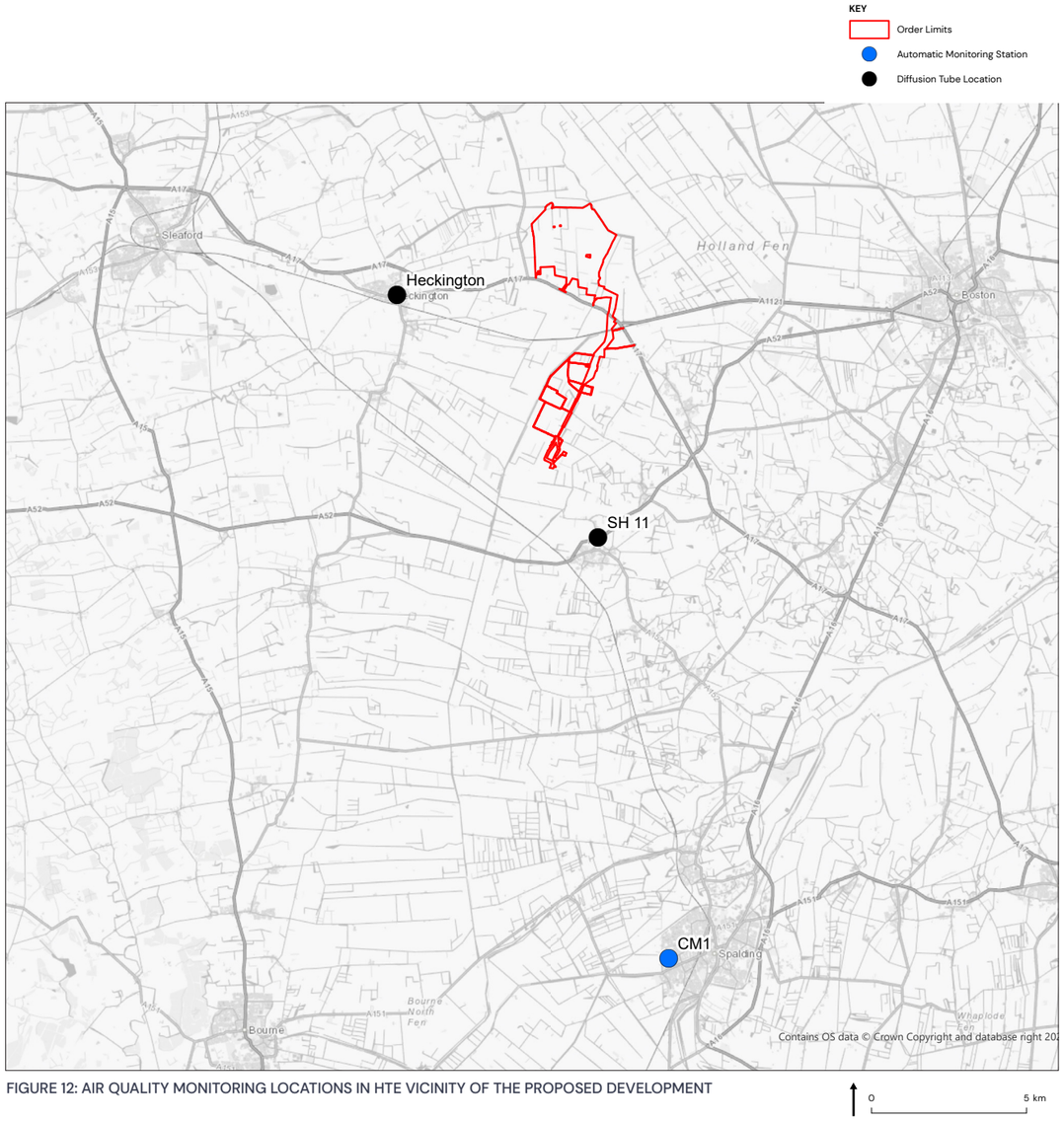


FIGURE 12: AIR QUALITY MONITORING LOCATIONS IN HTE VICINITY OF THE PROPOSED DEVELOPMENT



# LAND USE AND AGRICULTURE

This Chapter of the ES (document reference 6.1.16) considers the potential effects of the Proposed Development on the agricultural land use of the Energy Park, and the potential effects on agricultural land quality and soil resources.

## BASELINE CONDITIONS

Agricultural land quality is assessed by use of the system of Agricultural Land Classification (ALC) devised by the Ministry of Agriculture, Fisheries and Food (MAFF). The ALC system divides land into five grades 1 to 5, with grade 3 divided into subgrades of 3a and 3b. The National Planning Policy Framework (NPPF) (2021) places Grades 1, 2 and 3a within the definition of the 'best and most versatile agricultural land' (BMV). The Energy Park is composed mainly of ALC Grade 3b (50.6%) and 3a (30.5%) with a smaller area of Grade 1 (11.1%) and Grade 2 (7.4%), shown in **Figure 13**. The Energy Park does not include any fields which are wholly Grade 1 or 2, the Grade 1 and 2 land within the Energy Park forms a complex mix and pattern, usually mixed with Subgrade 3b moderate quality land.

## ASSESSMENT OF POTENTIAL FOR LIKELY SIGNIFICANT EFFECTS

The Proposed Development has been designed to minimise the impact on BMV agricultural land. The tracks and fixed infrastructure, where BMV land cannot be avoided, will affect approximately 1 ha of Grades 1 and 2 land, and less than 2 ha of Subgrade 3a. This results in a moderate adverse effect, which is not significant in EIA terms.

The installation of frame legs and solar panels will not result in the sealing of agricultural land, and an agricultural use will continue. The installation process has the potential to affect soils in localised areas but this will be minimised through avoiding trafficking soils when conditions are not well suited to vehicle passage. The effect on soils overall is considered not significant in EIA terms.

The limited physical impact of inserting the frame legs, the limited and restorable effect of trenches, and with a combination of good practice and careful management and mitigation, the agricultural land quality will not be significantly adversely affected at the installation phase. The agricultural land classification of the land is not affected and the resource is retained. The overall effect on soils and agricultural land quality is not significant.

At decommissioning stage the panels can be unbolted and removed. The removal of the solar panel frame legs would not create any significant disturbance to the agricultural land. There would be no significant adverse effects on the land quality or soils.

There should therefore be no overall significant adverse effect on the agricultural land quality of the Energy Park or Offsite Grid Connection Route Corridor and, with carefully planned and well executed decommissioning works, the soil resource will not be significantly adversely affected by the Proposed Development.

There should be no additional adverse effects on soils or land quality during the operational stage, as any need for traffic to pass over agricultural land will generally be limited to normal land and grassland management practices and maintenance.

The potential to use the Energy Park for different arable or livestock uses will be reduced as a result over the operational lifetime of the Proposed Development. However, a reduction in flexibility of land use is neither a policy requirement nor an environmental impact.

With careful planning and practice any localised effects on farm businesses can be avoided or mitigated. There will be a change from arable to grassland farming, which

will require increased labour. The overall effect on farm businesses is minor, and potentially beneficial.

The land for the Energy Park is currently used for agricultural production. This land will continue to be used for agricultural production when the Energy Park is operational. The incremental difference between using the BMV land within the Energy Park for sheep grazing rather than for cereal or industrial oilseed production, compared to the crop growth were poorer quality land to be used instead, is less than 300 tonnes per annum. Planning policy does not require or protect intensive agricultural use, but the implications are in any case limited and not significant.

## MITIGATION AND ENHANCEMENT

At the detailed design stage, the permanent sealing of BMV will be minimised as far as reasonably practicable, and where operational constraints enable, by locating access tracks and fixed equipment within Grade 3b land.

Good soil management practices such as avoiding trafficking or handling soils when wet and restoring soils into trenches in the same order they came out will be adhered to during the construction phase of the Proposed Development and would be implemented through a Construction Environmental Management Plan (CEMP). An Outline CEMP (document reference: 7.7) has been prepared as part of this application and contains a draft Soil Management Plan for both the Energy Park and the Offsite Grid Connection Corridor.

Whilst the potential impact on soils during the operational phase are expected to be minimal, good practice will be employed to ensure that any works (such as the maintenance of the solar arrays and the management of the land underneath them) will be undertaken in a manner that prevents damage to the soil resource, so far as possible.

Potential short-term effects on farm businesses and enterprises as a result of construction and decommissioning, such as closure or severance of field accesses at key times of the farming year, will be mitigated by timing and liaison with landowners, and a CEMP will be implemented to ensure effects are minimised.

## CUMULATIVE AND IN-COMBINATION EFFECTS

The details of proposed construction techniques and timing for the identified cumulative schemes is not currently known. Were these proposals to result in the loss of BMV agricultural land, this would be of major adverse significance. However, it may be that, as with this proposal, the proposed developments are generally reversible and the loss of BMV agricultural land is more limited.

In reality this potentially significant impact is likely to be reduced when mitigations such as understanding the actual breakdown of BMV land on the sites, proposed construction and decommissioning works, and ongoing agricultural practices are considered.

## CONCLUSION

With the implementation of the mitigation **no significant residual effects** are considered likely on agriculture and soils as a result of the Proposed Development.

| KEY | | Ha | % |
|---|---|---|---|
| | Grade 1 | 58 | 11.1 |
| | Grade 2 | 39 | 7.4 |
| | Grade 3a | 160 | 30.5 |
| | Grade 3b | 265 | 50.6 |
| | Grade 4 | | |
| | Grade 5 | | |
| | Non-agricultural | 2 | 0.4 |
| | Urban | | |
| | Not surveyed | | |

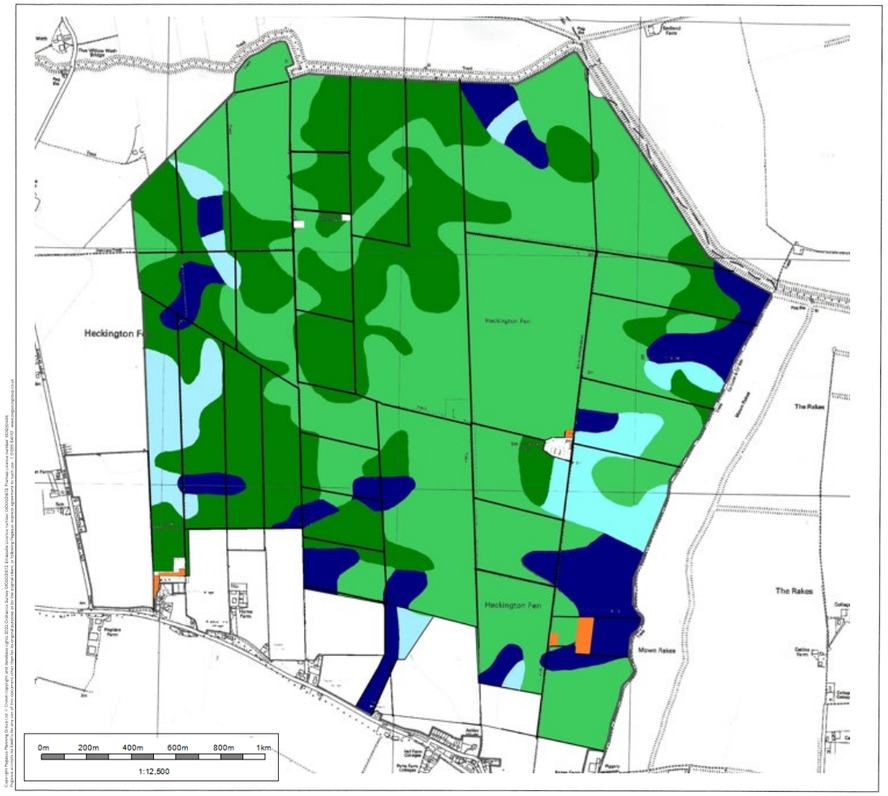


FIGURE 13: AGRICULTURAL LAND CLASSIFICATION

# GLINT AND GLARE

The Glint and Glare Chapter of the ES (document reference 6.1.17) has assessed the possible glint effects that arise as a consequence of the sun's rays interacting with the solar panels that are proposed to be erected. Glint is a term used to describe specular reflection which is produced as a direct reflection of the sun on the surface of the solar panels. It occurs with the reflection of light from smooth surfaces such as glass, steel, and calm water. It is used interchangeably with 'glare'.

The computer model used to categorise glint does so by specifying whether glint is 'green' or 'yellow' and this represents the intensity of the glint event and the potential for after image. It is commonly accepted that levels of green glint are acceptable overall, and for flight approaches, however, is not acceptable at Air Traffic Control Towers (ATCT).

As the Energy Park will consist of fixed south orientated panels, only these types of panels have been assessed and modelled. The model was run three times to assess the impact of the panels at 10, 15 and 20 degrees to provide an assessment of the range of panel angles under consideration.

## BASELINE CONDITIONS

For the purposes of this assessment, a presumption has been made that there is no baseline glint currently occurring at any of the receptors due to a number of factors. These include the fact that there are no operational solar farms in the immediate vicinity of the proposed Energy Park, the ones that do exist are greater than 10km away so at this distance they will not present any effects. Vicarage Drove is a consented, but not yet operational 49.9MW solar farm applicaiton directly next door to the Bicker Fen substation. This is approximately 4.5km south of the Energy Park site. This site is considered within the cummulative assessment

Furthermore, there is great interchangeability between potential receptors from more common materials such as glass in windows, moving vehicles, glasshouses and calm water so it is not possible to correctly quantify the full level of glint experienced.

## ASSESSMENT OF POTENTIAL FOR LIKELY SIGNIFICANT EFFECTS

### Construction

During the initial phase of ground preparation, there is not likely to be any reflections present other than possibly from the windscreens of vehicles used in the Energy Park site preparation works. It is anticipated that the Energy Park will be constructed sequentially in sections, with one part of being built out before the next is commenced. In this way completed sections will help provide screening from ongoing construction activities.

Some of the mounting frames, which will be manufactured from metal have the potential to cause reflections, until the panels are installed on them. Specific quantification of this type of reflection is not possible but it is short term and temporary.

The assessment has confirmed that, provided the above mitigation is applied, there are not expected to be any significant effects during this phase of development.

### Operation

During the operational phase effects will vary during the course of each year as the sun attains different heights in the sky and weather patterns vary. The potential effects comprise glint effects at various receptors. These have been categorised separately as rail receptors, road receptors, aviation receptors and dwellings. Observation Points, shown in **Figure 14**, were determined which are a representative of dwellings in the surrounding area to the Energy Park. Based on


FIGURE 14: GLINT MAP

the methodology outlined in this Chapter of the ES (document reference 6.1.17), receptors to which intense glint effects could cause potential health and safety issues (i.e. aviation, road and rail) are classified as high sensitivity, while receptors such as dwellings, where glint would more likely cause nuisance would be classified as medium sensitivity.

### *Railways*

There are two rail receptors in the area, the first runs outside the 5km study area (Rail 1), and the second runs to the south of the Energy Park, between Sleaford and Boston, at a distance of approximately 1.3km at its closest point (Rail 2). It passes to the south of Heckington, before converging with and then running adjacent to the A1121, to the east of the Energy Park.

The two sections of track considered in the glint assessment, both running to the south of the Energy Park site are likely to have low to non-existent visibility, especially after the provision of onsite screening.

For Rail 1 the Significance of Effects is Negligible for all three panel angles.

For Rail 2 the Significance of Effects is Negligible for all three panel angles.

### *Roads*

There are a number of roads within the study area comprising national, regional, and local roads. There are no motorways. Motorists are, as a matter of routine, used to driving towards the sun at certain times of the day, which provides a much more intense source of light than glint will. Notwithstanding this, roads within the immediate vicinity of the Energy Park have been assessed for glint effects.

For the roads assessed, when the panel angle is 15 degrees, the A1121, the A17, the B1395 and Littleworth Drove, have been assessed as having potential for Significant effects prior to mitigation, however this becomes Not Significant after mitigation is taken into account. When the panel angles are 10 degrees and 20 degrees, the A1121, the A17, the B1395 and Littleworth Drove, have potential for Significant effects prior to mitigation, however this becomes Not Significant after mitigation is taken into account.

For all three panel angles, Claydike Bank Road and Harrisons Drove, both have effects that are Not Significant, due to lack of visibility to the Energy Park and accessibility.

### *Observation Points*

Due to the size of the Energy Park it is necessary to consider a large number of observation points around the perimeter to properly assess the likely effects, shown in Figure 14. The Significance of Effects has been assessed for each of the representative Observation Points (OP):

- For all three panel angles, OP1-OP6, all have effects that are Not Significant.
- For all three panel angles, with OP7 to OP17 the effects are considered Significant prior to mitigation, but this is reduced to Not Significant after mitigation is implemented.
- For all three panel angles, OP18 can be ignored as it is not a residential receptor.
- For all three panel angles, OP19 is assessed as having Significant effects prior to mitigation but this is reduced to Not Significant after screening is taken into account.
- For all three panel angles, OP20 to OP28, all have No Significant effects.
- For all three panel angles, OP29 to OP38 present Significant effects prior to onsite mitigation which are reduced to Not Significant after mitigation is taken into account.
- For all three panel angles, OP39 and OP40 have No Significant effects.

### *Aviation*

Aviation was scoped out which was agreed through consultation, however a brief assessment of the closest major aviation receptor, RAF Coningsby was carried out and effects were found to be Negligible.

## Decommissioning

The decommissioning process will largely be the exact reverse of the construction process, with activities involving the removal of the Energy Park site infrastructure piece by piece. As panels are removed from the mounting frames the mounting structures will become more visible again and these will still have potential to reflect glint. It is anticipated that the Energy Park will be decommissioned in sections with panels being removed from one section, then the mounting structures, cabling (if required) and other site infrastructure being removed before the next section of the Energy Park undergoes the same procedure.

Whilst the mounting structures are visible there is some potential for glint to be reflected back towards receptors, but this will be a temporary effect for a short period of time, so it is not considered necessary to further mitigate against it.

The assessment has confirmed that, provided the above mitigation is applied, there are not expected to be any significant effects during this phase of development.

## Mitigation and Enhancement

Mitigation measures have been developed and incorporated throughout the design process. The selection of fixed panels reduced the potential for any effects to be visible at OPs to the north of the Energy Park.

Screening in the form of hedgerow planting and improvement has been proposed which will significantly reduce potential effects. Due to this screening, for all the OPs and roads, the significance of effects will be considerably reduced.

## Cumulative and In-combination Effects

There will be no cumulative effects as the potential cumulative solar developments that have been identified all lie further than 5km away and will not have an effect at this distance. The solar panels identified within 5km have screening to the receptors and so will have no effects.

## Conclusion

The Proposed Development at the Energy Park could be made with the mitigation measures identified. They are acceptable and result in **no adverse significant effects**.

# MISCELLANEOUS ISSUES

The Miscellaneous Issues Chapter of the ES (document reference 6.1.18) described and assessed the potential effects of the Proposed Development in terms of Major Accidents and Disasters, Waste, Electric magnetic and electromagnetic fields and telecommunications, Television Reception and Utilities. These topics are considered in turn in the following sections.

## MAJOR ACCIDENTS AND DISASTERS

This section summarises the potential effects of the Proposed Development on the risks of major accidents and disasters occurring. 'Accidents' are an occurrence resulting from uncontrolled developments in the course of construction, operation, and decommissioning (e.g., major emission, fire or explosion). 'Disasters' are naturally occurring extreme weather events or ground related hazard events (e.g., subsidence, landslide, earthquake).

### Baseline Conditions

A number of receptors are present within the vicinity of the Proposed Development which could be vulnerable to major accidents and disasters, these include towns villages, farms and residential homes, commercial sites and buildings, roads, railways, ecological features and underground infrastructure services.

Assessment of potential for likely significant effects

The assessment has considered the following topics; health and safety at work, unexploded ordnance (UXO), design of equipment and fire risk, rail accidents, utilities failure and criminal damage. The assessment concluded that with the implementation of mitigation measures embedded in the design of the proposal no significant effects are anticipated for the construction, operation of decommissioning of the Proposed Development.

### Mitigation and Enhancement

Mitigation measures for minimising the risk of major accidents during construction and decommission are addressed through appropriate risk assessments included in the Outline Construction Environmental Management Plan (oCEMP) (document reference 7.7) and Outline Decommissioning and Restoration Plan (oDRP) (document reference 7.9). Mitigation measures included within these documents include measures to reduce the risk of fire and measures to minimise risk to health and safety for all workers. During the operational phase proposed mitigation includes the production / use of an Outline Energy Storage Safety Management Plan (oESSMP) (document reference 7.11), this will be updated and maintained as a 'live document' throughout the operational phase of the Proposed Development. This has been produced following consultation with Lincolnshire Fire and Rescue Service.

### Cumulative and In-combination Effects

No significant cumulative effects associated with major accidents and disasters would arise from the Proposed Development.

### Conclusion

Given the nature of accidents and disasters, there is the potential for significant effects if an event does occur, however, the assessment has concluded that the risk of such events occurring is low for the Proposed Development, and **no significant residual effects** on the environment are therefore anticipated.

Taking into account the good industry practice and mitigation measures discussed above, the risk of accidents and disaster events at the Proposed Development is considered low. However, the assessment has concluded that the risk of such events occurring is low.

## WASTE

This section of the ES chapter sets out the approach to waste management that will be applied to the design and the expected waste streams during each phase of the Proposed Development. 'Waste' is defined as materials that are unwanted, having been left over after the completion of a process which would otherwise be discarded. In practical terms, wastes include surplus spoil, scrap, recovered spills, unwanted surplus materials, packaging, office waste, wastewater, broken, worn-out, contaminated or otherwise spoiled plant, equipment and materials.

### Baseline Conditions

Waste at the Proposed Development's site area is currently associated with agricultural practice. Potential waste streams currently could include left over crop and straw bales, fertiliser sacks and chemical containers.

The plastic waste associated with the Proposed Development's site area is currently sent to Lindum Waste Recycling Centre (c.39km north-west) for baling. Approximately 2.5 tonnes of plastic waste are removed from the Proposed Development's site area annually.

### Assessment of potential for likely significant effects

The nature of the Proposed Development and the known construction and decommissioning processes indicate no significant quantities of waste are anticipated. The generation of construction-related waste can be significantly reduced through the choice of materials and other opportunities pre-construction phase will be explored as far as possible. Possibilities to reuse or recycle materials will be explored before resorting to landfill options. With these in place and the appropriate control measures followed, no significant effects are anticipated.

During the operation phase of the Proposed Development waste arising is expected to be substantially less than during the construction phase. The operational phase effects associated with waste are anticipated to be not significant with waste generated during operation assessed that it will be adequately managed.

### Mitigation and Enhancement

As part of the embedded mitigation, a CEMP and DRP will be secured through respective DCO requirements and will be applicable for the commencement of construction; similar measures will then be included in a decommissioning scheme.

Waste streams will be prevented from arising and designed out where possible. Opportunities to re-use material resources will be sought where practicable. Where re-use and prevention are not possible, waste arisings will be managed in line with the Waste Hierarchy.

### Cumulative and In-combination Effects

It is assumed that for all the identified cumulative solar and energy storage schemes that waste would be appropriately managed through all phases of the development and therefore significant cumulative effects are considered unlikely.

### Conclusion

During construction, operation, and decommissioning, the re-use or recycling of materials will be explored before resorting to landfill options. Waste during the construction, operation and decommissioning phase will be dealt with as part of a CEMP and DRP, which will be prepared in line with relevant legislation and guidance. Therefore, it is anticipated that there would be **no significant effects** on waste from the Proposed Development.

## ELECTRIC MAGNETIC AND ELECTROMAGNETIC FIELDS

This section of the ES chapter sets out the approach to the potential of electric, magnetic and electro-magnetic fields (EMFs) produced by the Proposed Development. EMF is produced both naturally and as a result of certain human activities. The earth has a magnetic field produced by currents deep inside the core of the planet; the earth is also subject to electric fields produced by electrical activity in the atmosphere such as thunderstorms.

EMFs are inevitable wherever electricity is produced, distributed, and used, including electrical substations, power lines and electric cables and around domestic, office or industrial equipment that uses electricity.

### Baseline Conditions

A proposed connection point for the underground 400 kV cable system will be to the existing National Grid Bicker Fen Substation approximately 8.5km south of the Proposed Development, which connects to the existing 400 kV overhead transmission network. This infrastructure has the potential to generate EMFs as it includes equipment of greater than 132kV.

Assessment of potential for likely significant effects.

No significant effects are anticipated as a result of the construction or decommissioning of the Proposed Development as the underground cable will not be connected during these phases and will not produce any significant EMFs.

Once operational the underground cable would not produce any external electrical fields and there will therefore be no significant effects in EIA terms.

### Mitigation and Enhancement

The relevant electrical infrastructure will comply with the current public exposure guidelines, and so no further mitigation is necessary.

### Cumulative and In-combination Effects

Magnetic fields are not added together where they may be present from multiple sources, therefore there will be no significant cumulative effects with other developments.

### Conclusion

During the construction and decommissioning phase no significant EMF effects are anticipated until the Proposed Development is operational and generating electricity. EMF's, specific to the 400 kV underground cable route are considered as the only relevant infrastructure to be assessed, and is demonstrated through the assessment work not to produce EMF exposure above public and occupational guidelines. Therefore, it is anticipated that there would be **no significant residual effect** on EMF from the Proposed Development.



## TELEVISION RECEPTION AND UTILITIES

This section evaluates the effects of the Proposed Development on telecommunication infrastructure, television reception and existing utilities.

### Baseline Conditions

There are understood to be no buried telecommunication infrastructure beneath the Energy Park. There are no phone masts present with the Order Limits. The nearest telecommunication mast is 350m west from the western boundary of the Order Limits, positioned adjacent to Sidebar Lane. Onsite utilities include water, sewers, a high-pressure gas pipeline and electrical cables.

### Assessment of potential for likely significant effects

During the construction, operational and decommissioning phase no significant effects on telecommunication or television reception as the infrastructure is either not present in the Proposed Development or in close proximity, and the nature and scale of the infrastructure in the Proposed Development will not cause any effects. Embedded mitigation measures will minimise risk of damage to utilities during construction and decommissioning. No effects on utilities are predicted as a result of the operational phase of the Development because no below-ground works will be required during operation.

### Mitigation and Enhancement

The risk of damage to utilities during construction would be minimised through embedded mitigation, which would involve measures such as a CEMP and DRP and mapping infrastructure that crosses the Proposed Development and avoiding utilities through the design.

### Cumulative and In-combination Effects

Cumulative effects will not occur in combination with other projects as the Proposed Development is predicted to have no significant effect on telecommunication, television or utilities.

### Conclusion

It is anticipated that there would be **no significant residual effect** on telecommunications, television reception and utilities from the Proposed Development

# SUMMARY

The aim of this ES has been to assess the 'likely significant effects' of the Proposed Development in accordance with The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations). Feedback from the formal consultation process has been taken into account when preparing the DCO Application and in undertaking the EIA process. Detailed assessments with respect to pertinent environmental topics have therefore been undertaken in accordance with definitive standards and legislation where available.

The design process, including siting of the solar panels, has been informed by the detailed environmental assessments so to limit any adverse effects. As a result of this process, with mitigation in place, no significant adverse effects have been identified.

Residual adverse significant effects are identified on landscape character and visual amenity, however, these are an inherent consequence of a new development of this type and scale. These are judged to be considerably limited by the existing vegetation that characterises the close to medium range landscape. Furthermore, the proposed mitigation planting has the potential to considerably reduce these effects and whilst certain elements of the Proposed Development would, inevitably, be more visible, for a scheme of its scale the residual landscape and visual effects arising are considered to be highly limited.

The Proposed Development is also considered to provide beneficial effects, in particular the generation of renewable energy for distribution onto the National Grid through the utilisation of energy. This aims to address the local and national renewable energy targets and ultimately reduce the reliance on fossil fuel-based sources as a form of energy production. The proposal is also considered to provide beneficial effects for local ecology through allowing the land a temporary period of rest from intensive agriculture and through the creation of grassland habitat. This will also provide a significant beneficial effect on local watercourses through the elimination of the use of fertiliser, herbicides and pesticides.

A number of environmental impact avoidance, design and mitigation measures have been identified to mitigate and control environmental effects during the construction, operation and decommissioning phase of the Proposed Development. It is proposed that these will be secured through appropriate requirements and other controls within the DCO Application for the Proposed Development, should this be granted.

In conclusion, the ES demonstrates that the design of the Proposed Development and its construction has taken into account the potential environmental effects and where necessary mitigation measures form an integral part of the scheme so to ensure that the environment is suitably protected and any impacts from the Proposed Development are minimised.

It is therefore considered that there are no overriding environmental constraints which would preclude the Proposed Development.



# REFERENCES

Reference 1 HMSO (2017) The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Reference 2 HMSO (2008) The Planning Act 2008

Reference 3 DESNZ~~CC~~ (2011) National Policy Statement for Energy (EN-1)

Reference 4 DESNZ~~CC~~ (2011) National Policy Statement for Renewable Energy Infrastructure (EN-3)

Reference 5 DESNZ~~CC~~ (2011) National Policy Statement for Electricity Networks Infrastructure (EN-5)

Reference 6 DESNZ (2023) Draft National Policy Statement for Energy (EN-1)

Reference 7 DESNZ (2023) Draft National Policy Statement for Renewable Energy Infrastructure (EN-3)

Reference 8 DESNZ (2023) Draft National Policy Statement for Electricity Networks Infrastructure (EN-5)

Reference ~~96~~ DLUHC (2015) Renewable and low carbon energy guidance

Reference ~~107~~ DBEIS (2020) Energy White Paper

Reference ~~118~~ HMSO (2021) The Carbon Budge Order

Reference ~~129~~ DBEIS (2021) Build Back Greener

Reference ~~1310~~ DBEIS (2022) British Energy Security Strategy

Reference ~~1411~~ DBEIS (2021) National Planning Policy Framework

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