Cottam Solar Project

Local Impact Report

EN-010133

West Lindsey District Council

October 2023

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1. Executive Summary

1.1. Island Green Power Limited (IGP) has applied for a Development Consent Order (DCO) for the Cottam Solar Project.

1.2. The application is for the construction, operation and decommissioning of a solar photovoltaic (PV) electricity generating facility, energy storage facility and export connection to the National Grid.

1.3. The application for the DCO has been submitted to the Planning Inspectorate, with the decision on the DCO being made by the Secretary of State of Business, Energy and Industrial Strategy (SoS) under the Planning Act 2008.

1.4. As part of the process, West Lindsey District Council (WLDC) are invited to submit a Local Impact Report (LIR). The LIR provides details of the likely impacts of the proposed development on the authority's area and is given weight in the decision making process.

1.5. The proposed Cottam Solar Park will exert a range of environmental, social and amenity impacts.

1.6. This report constitutes WLDC's LIR. It provides details of the likely impact of the proposed development on the district of West Lindsey and will be submitted to inform the examination of the Cottam Solar Project application by the Examining Authority (ExA) on behalf of the SoS.

1.7. The key impacts identified and expanded upon in the LIR include:

- Cumulative impacts with other projects;
- Approach to project design (including site selection and alternatives;
- Landscape and visual;
- Ecology;
- Biodiversity (including Biodiversity Net Gain);
- Socio-economic impacts;
- Cultural heritage;
- Climate resilience;
- Agricultural land;
- DCO 'requirements'; and
- DCO articles.

1.8. Some of the impacts relating to the above are able to be resolved through clarifications and/or the provision of further information by the applicant. More significant impacts may require more material amendments and/or the submission of further information to enable the project to be determined with all required information before the examination.

1.9. Having identified the local impacts, WLDC maintain a commitment to engage with the applicant to seek to address the adverse impacts. Matters of agreement and disagreement will be set out in a Statement of Common Ground between the parties.

2. Terms of Reference

Introduction

2.1. This report comprises the Local Impact Report (LIR) of West Lindsey District Council (WLDC) for the Cottam Solar Project (hereafter referred to as the 'Scheme') that has been submitted by Cottam Solar Project Limited ('the Applicant'). The Applicant is part of Island Green Power Limited (IGP). IGP is also progressing the Cottam Solar Project (EN010133), which is within the same locality as the Scheme. The West Burton Solar Project was accepted for Examination by the Secretary of State on the 18th of April 2023 and held a preliminary meeting on the 7th of September 2023; however, during this meeting the examination was adjourned.

2.2. WLDC have had regard to the purpose of LIRs as set out in s60(3) of the Planning Act 2008 (as amended); Department for Levelling Up, Housing and Communities' (DLUHC) Guidance for the examination of applications for development consent; the Planning Inspectorate's Advice Note One, Local Impact Reports; and the Planning Inspectorate's Example Documents, in preparing this LIR.

Scope

2.3. The LIR does not describe the proposed development any further, relying on the Applicant's description as set out in Chapter 4 of the Environmental Statement (ES) (Doc. Ref. EN010133/APP/C6.2.4). The extract below is taken from section 4.2 of the of the aforementioned document and provides an overview of the Scheme:

> *"4.2.1 The Scheme comprises a number of land parcels (the 'Site' or 'Sites') described as Cottam 1, 2, 3a and 3b (see Location Plan [EN010133/APP/C2.1] or Figure 1.1 of the ES) which accommodate ground mounted solar photovoltaic (PV) generating stations (incorporating the solar arrays); grid connection infrastructure and energy storage; and the Cable Route Corridors. The Scheme will comprise the construction, operation and maintenance, and decommissioning of a generating station (incorporating solar arrays) with a total capacity exceeding 50 megawatts (MW). The Scheme is defined as a NSIP under Sections 14(1)(a) and 15(2) of the Planning Act 2008 (Ref 4-1), as it is an onshore generating station in England with a capacity of more than 50 MW.*
>
> *4.2.2 The solar array Sites and associated substations and energy storage are to be connected to the National Grid at a substation at Cottam Power Station. The Scheme will connect to the National Grid substation via a new 400kV substation constructed as part of the Scheme to provide the connections to the various solar Sites. The substations, cable connections and energy storage will be required for the duration of the Scheme. The substations and energy storage will be decommissioned and removed at the end of the lifetime of the Scheme but the underground cables are anticipated to be decommissioned in situ to minimise environmental impacts.*
>
> *4.2.3 The operational life of the Scheme is anticipated to be 40 years. Once the Scheme ceases to operate, it will be decommissioned. A 40-year period for the operational phase of the Scheme has been assessed in the EIA and reported in this ES."*

2.4. Section 4.5 of Chapter 4 of the ES also sets out the key components of the Scheme. These components are set out below and groups them according to the works number that they are associated to.

The Ground Mounted Solar Photovoltaic Generating Stations (Work No.1)

2.5. The following components would be associated with the solar photovoltaic (PV) generating stations.

- Solar PV Panels.
- Mounting Structures:
  - Whilst it is likely that the Scheme will utilise tracker solar panels, optionality is included within the application to be able to utilise fixed panels. Tracker panels have a maximum height parameter of 4.5m, whereas fixed panels are up to 3.5m.
- Conversion Units (inverters, transformers, switchgear, and monitoring and control systems):

- Design Parameters of 15m in length by 5m in width and a maximum height of up to 3.5m in height (unless sited within a higher risk flood zone, in which case it could be up to 4.5 m in height).

- DC electrical ('combiner') boxes:
  - The Maximum width of the boxes is 0.55m, maximum length 0.65m and maximum height 0.26m.
- Inter Solar Panel Electrical Cabling.

Energy Storage Facility (Work No.s 2 and 3)

2.6. The Applicant has proposed two alternative layouts for energy storage. These are Work No. 2 and Work No. 3. The ES has considered both options.

2.7. It is assumed that the form of energy storage will be battery storage and as such, the Energy Storage Facility as it is termed in the draft DCO Schedule 1, is often referred to as a 'BESS' (Battery Energy Storage System).

- The Energy Storage Facility will utilise a lithium ion energy storage system. The batteries, inverters, transformers and switchgears ('conversion units' as explained below) will be mounted on a concrete foundation in a single compound. A piling solution may be required, depending on the results of geotechnical surveys. If piling is required, it would involve piling up to 12m in depth.
- The maximum dimensions of individual modular battery storage container and interconnector container within a BESS compound is 2.0m width by 3.0m length and up to 3.5m in height. The maximum dimensions of modular battery storage and interconnector container strings within a BESS compound is 24.0m by 3.0m footprint and up to 3.5m in height.

Substations (Work No.4)

2.8. Substations will be required at each Solar Farm Site. Maximum parameters for the onsite substations, including control building or container, welfare facilities, hardstanding areas and hardstanding parking areas therein, but excluding the full extent of the cabling are outlined below:

- Site Area Parameter:
  - Work 4A "Cottam 1" – 2.90 ha;
  - Work 4B "Cottam 2" – 0.70 ha;
  - Work 4C "Cottam 3a" – 0.70 ha; and
  - Work 4D "Cottam 3b" – 0.70 ha.
- Height Parameter:
  - Work 4A "Cottam 1" – 13.2m
  - Work 4B "Cottam 2" – 6.5m
  - Work 4C "Cottam 3a" – 6.5m
  - Work 4D "Cottam 3b" – 6.5m

2.9. The maximum height of the substation at Cottam 1 will be 13m to the top of the busbars. The maximum height of the sub-stations at Cottam 2, 3a and 3b will be 6.5m to the top of the busbars 2.6m high palisade fencing will be provided around the substation compound.

Grid Connection Works at Cottam Power Station (Work No. 5)

2.10. Works at the existing National Grid Cottam 400KV substation Site to facilitate connection to the Scheme will include re-equipping an existing (but currently unused) generator bay with a 400KV circuit breaker, current transformers, metering current transformer/voltage transformer (CT/VT) units and line disconnector for the 400KV connection to the Cottam 1 Solar Site.

Works to lay electrical cables - the Cable Route Corridor (Work No. 6A) and Shared Cable Route Corridor (Work No.6B)

2.11. The electricity generated by the Scheme will be exported to the National Grid substation at Cottam Power Station via a number of underground cable circuits sited within the cable route corridor. The components of the cable corridor include the Cottam Cable Corridor (Work No.6A) and the

2.12. The Cottam Cable Corridor (Work No.6A) consists of the following:

- A 400kV cable circuit (consisting of up to 3 No. cables) cables will export the power generated by the Scheme and power stored at the BESS from the substation at Cottam 1, to the National Grid substation at Cottam Power Station. The length of this cable is approximately 13.3 km.
- A 132kV cable circuit (consisting of up to 3 No. cables) will export power from the substation at Cottam 3a to the substation at Cottam 1. The length of this cable is approximately 14.2km.
- A 132kV cable circuit (consisting of up to 3 No. cables) will export power from the substation at Cottam 3b to the substation at Cottam 1. The length of this cable is approximately 12.6km.
- A 132kV cable circuit (consisting of up to 3 No. cables) will export power from the substation at Cottam 2 to the substation at Cottam 1. The length of this cable is approximately 9.3 km.

2.13. Each of these cable circuits are also required to facilitate the import of electricity to be stored within the BESS at Cottam 1. The Cable Route Corridor (Work No. 6A) broadly extends to 50m in width (there may be slightly wider areas where the Route deviates).

2.14. Part of the Gate Burton Energy Park cable route and West Burton Solar Project cable route are proposed to be located within the cable route corridor for the Scheme's cable circuits (the Shared Cable Route Corridor). This is identified as Work No.6B on the Works Plans.

2.15. It is expected that this will be constructed in one of two cumulative scenarios:

1) Simultaneous construction of ducts and cables for three projects over 18 months. Ducts installed together, cables pulled separately, considering haul roads, compounds, and bridges. Cable pulling involves joint bays and chambers.
2) Consecutive installation of project ducts and cables over 5 years, assuming infrastructure remains. This represents a worst-case assessment scenario.

Various Works Within the Solar Farm Sites (Work No.7)

2.16. Work No. 7 includes for a range of works within the Solar Farm Sites, these include:

- Fencing, Security and Lighting;
- Landscaping;
- Internal Access Tracks;
- Surface Water Drainage; and
- Secondary Construction Laydown Areas.

Purpose and Structure of the LIR

2.17. The primary purpose of the LIR is to identify the policies in the Central Lincolnshire Local Plan in so far as they are relevant to the proposed development and the extent to which the development accords with these policies. It does this under topic-based headings reflecting the likely nature of impacts. The key issues for the local authorities and the local community are then identified, followed by commentary on the extent to which the applicant addresses these issues by reference to the application documentation, including the DCO articles, requirements and obligations, as relevant.

2.18. The proposed Cottam Solar Park does not commit to a maximum stored capacity. However, within the Design and Access Statement Part 1 of 4 (Doc. Ref. EN010133/APP/C7.6) it states that the Scheme will have a total generating capacity of up to 600MW of renewable solar energy for 40 years for distribution by the National Grid. Within Chapter 4: Scheme Description of the ES, the

Applicant has stated that they have not because there are a range of PV technologies are developing rapidly and may be available at the time of construction.

2.19. This LIR identifies relevant policies within the Central Lincolnshire's Local Plan and the extent to which the proposed development accords with these policies. Topic based headings are used as a framework to set this assessment of the impacts within and key issues are identified along with commentary on the applicant's approach to mitigating these impacts.

3. Local Context

Central Lincolnshire and the West Lindsey district

3.1. West Lindsey is a district council located in Central Lincolnshire, a collective area that encompasses the City of Lincoln, North Kesteven and West Lindsey. The West Lindsey district covers an area of over 1,150km^2 and is located within Lincolnshire County Council who are the county council and are also impacted by the proposed solar farms.

3.2. Central Lincolnshire is characterised by a population that lives in a range of settlements that vary in size and character. Lincoln is the largest settlement with a population of approximately 110,000 living in the principle urban area. Lincoln acts as a service centre over a wide geographical area, with villages sourcing most services and employment requirements in the city, effectively extending its catchment population to around 165,000.

3.3. West Lindsey borders North Lincolnshire and North East Lincolnshire to the north; East Lindsey in the east; North Kesteven and the city of Lincoln in the south. The River Trent forms a natural boundary to the west where the district meets Bassetlaw District Council and Nottinghamshire County Council, both of which are affected by the proposed Cottam solar farm and the grid connection.

3.4. The West Lindsey district hosts main towns such as Gainsborough, Caistor and Market Rasen, which serve the northern and southern parts of the wider Central Lincolnshire area. Gainsborough experienced significant growth during the 19th century as an industrial and engineering centre, with a shift of focus to manufacturing on the 20th century. It now provides a thriving manufacturing/engineering sector with national and international companies headquartered in the town.

3.5. WLDC is predominantly rural and interspersed with settlements across the area. The district provides an attractive setting for its three market towns of Caistor, Gainsborough and Market Rasen. The district is the 13th most sparsely populated area in England with a population of 95,153 and a density of 82 people per km^2 based on 2021 census data from the Office of National Statistics (ONS). The population has increased by 6% since the last census in 2011. Over 23% of the population of West Lindsey in the census are over the retirement age compared to 19% in the rest of the United Kingdom

3.6. The remainder of Central Lincolnshire and the West Lindsey district is predominantly rural, characterised by a settlement pattern of villages as well as the smaller towns of Market Rasen and Caistor. The average population density is amongst the lowest in lowland England, with the majority of settlements not exceeding a few hundred people.

3.7. Collectively, the rural area nonetheless accounts for over half of Central Lincolnshire's population. Functionally, the rural villages typically operate as clusters that share key services, with larger villages acting as local service centres upon which communities rely for basic facilities and as social hubs.

3.8. The Ministry of Defence (MoD) has a strong presence in the West Lindsey District and the wider Central Lincolnshire area. Active Royal Air Force (RAF) bases at Scampton, Waddington, Cranwell and Digby make a significant contribution to the area's demographic and economic make up. Former bases have been utilised to deliver new housing and employment development. Central Lincolnshire is home to the Red Arrows and its RAF heritage (including Lincolnshire's historic role as the centre of Bomber Command and the neighbouring base for the Battle of Britain Memorial Flight in East Lindsey) support the expansion for the area's existing visitor economy.

Landscape character

3.9. Central Lincolnshire's natural environment is varied and contrasting, characterised by gentle chalk and limestone uplands with low lying fens and fenland. The Lincolnshire Wolds Area of Outstanding Natural Beauty (AONB) falls partly in Central Lincolnshire, with its distinctive landscape of rolling hills and nestling villages.

3.10. The wider rural landscape of Central Lincolnshire comprises a sweeping character with big skies, and is a highly valued asset, making a significant contribution to local distinctiveness and attractiveness.

3.11. The escarpment of the Jurassic Lincolnshire Limestone, known locally as the Lincoln Edge, runs the full length of Central Lincolnshire, forming a unifying topographic feature and, as a key factor in the origins and historic development of Lincoln, makes a strong contribution to its present quality and character.

3.12. Outside of the urban areas, land use in Central Lincolnshire and West Lindsey in particular is predominantly agricultural with intensive arable crops dominating. Soils are typically fertile and of high quality for agriculture.

3.13. West Lindsey and the wider Central Lincolnshire area hosts a wide range of natural habitats, including wetland, woodland, calcareous grassland and remnants of heathland fen, which together provide ecological networks and nodes of sufficient scale to support wildlife adaptation and environmental resilience to climate change.

3.14. Biodiversity in the area is experiencing pressure from factors including climate change, habitat fragmentation, development and large scale intensive agriculture. Major landscape-scale initiation are proposed to restore and enhance the areas ecological networks and corridors.

Socio-Economic

3.15. As set out in the Central Lincolnshire Local Plan, which is the Local Plan adopted by West Lindsey, Central Lincolnshire is located within the Greater Lincolnshire Local Enterprise Partnership (GLLEP) area and represents roughly 30% of the GLLEP area's population, employment and business base. The draft Local Industrial Strategy (LIS) notes that Greater Lincolnshire has an economy of £20.7bn with an ambition to grow the Gross Value Added (GVA) by £3.2bn by 2030. The GLLEP area boasts a mix of traditional manufacturing, a comprehensive agri-food sector, energy and services, and is strong in health and care and the visitor economy. In these sectors and others the area benefits from a large number of small businesses – a distinctive feature of the economy.

3.16. The GLLEP's priority sectors include; agri-foods, energy and water, health and care, visitor economy and ports and logistics, but this should not diminish the important roles of other sectors, including manufacturing and engineering, to the local economy. The Central Lincolnshire Authorities will play a key role in the delivery of the vision for most of these sectors.

3.17. The Economic Needs Assessment (ENA) (2020) projects the economic growth and job growth to 2040, which in turn was influenced by the LIS and other work being produced by the GLLEP. The ENA highlights that there has been strong growth in recent years, outstripping anticipated growth, and projects forward a growth of approximately 992 jobs per year.

3.18. The visitor economy is a significant and growing sector within West Lindsey. The area is an attractive, peaceful rural area which combines an outstanding natural environment with historic villages in close proximity to the City of Lincoln. Lincolnshire's visitor economy is worth £2.4bn (STEAM data Lincolnshire County Council), with the sector supporting 30,000 jobs and a far reaching supply chain across the county. Food and drink spending alone generates £44m into the local economy, with recreation adding £18m and retail contributing £59m. The visitor economy is a significant sector for people's livelihoods.

3.19. The impact of Covid lockdowns has been severe. Lincolnshire has experienced a 52% reduction in all tourism spending (STEAM data 2020), with full time jobs being reduced by half from 2,500 jobs to just over 1,200. There has been a 52% reduction in visitor numbers and a 50% reduction on the number of visitor days. Food and drink spend feel from £44m to £21m (reduction of £13m) and retail spend fell from £59m to £29m 9a reduction of £20m). Recreational spend reduced by £10m to £8m. Overall, local tourism businesses have experienced a reduction of over £100m from their revenue.

3.20. Reflective of the defining agricultural character and culture of West Lindsey, one of the key tourist events is the Lincolnshire Show, held annually at the Lincolnshire Showground. The show is a flagship event for the area, with over 60,000 visitors and 500 exhibitors each year. The success of the Lincolnshire Show is strongly relies upon the local tourism sector accommodating the visitor demand it creates.

3.21. Forecasts have predicted that it will take a timescale of up to 2025/26 for businesses in the sector to recover to pre-Covid levels, based on the assumption that no material externalities will compromise this recovery.

Hydrology

3.22. Water is an important aspect of Central Lincolnshire's environment. The area has a long history of land drainage and flood management, and significant areas of low-lying land are maintained for agriculture by pumped drainage. River flooding is closely controlled through embankments and washlands as part of wider management plans for the main river catchments. Conversely, Lincolnshire is already experiencing pressure on its water resources from increasing trends in consumer and commercial demand, coupled with predicted increases in the frequency and severity of drought due to climate change. Major new infrastructure to supply the Lincoln area with water abstracted from the Trent was completed in July 2014.

3.23. Due to its topographical characteristics, the area has a history of land drainage and flood management, and significant areas of low-lying land are maintained for agriculture by pumped drainage. River flooding is closely controlled through embankments and washlands as part of wider management plans for the main river catchments.

Site description and surroundings

3.24. The Scheme is located within a 19km radius of the Point of Connection (POC) at the former Cottam Power Station. The majority of the Scheme will be located within the jurisdiction of West Lindsey District Council and Lincolnshire County Council. The POC at the former Cottam Power Station and a part of the Cable Route Corridor are located within the jurisdiction of Bassetlaw District Council and Nottinghamshire County Council.

3.25. The wider area is predominantly rural with a scattering of small settlements and villages throughout. The main highways routes in the vicinity of the Order limits are the A1500 which runs broadly east to west situated to the south of Cottam 1; the A631 which runs broadly east to west situated to the south of Cottam 2; the B1205 broadly running east to west in the vicinity of Cottam 3a and 3b; and the A15 running north to south and situated to the east of the Sites.

3.26. The land within the Order limits is not covered by any statutory landscape designations, i.e., National Parks, or Areas of Outstanding Natural Beauty (AONB). The Cottam and West Burton Power Station structures situated to the west of the Sites, are dominant structures within the landscape; however, there are high sensitivity receptors within the wider landscape. Specifically, these receptors include the Ridge Area of Greater Landscape Value (AGLV) and Gainsborough AGLV.

3.27. The Solar Array Sites are all situated within the District of West Lindsey. Cottam 1 is made up of a number of sites / fields clustered within an area of countryside centred around the village of Coates. Cottam 2 sits to the north of Cottam 1 and is located to the east of the village of Corringham. Cottam 3 sits to the north of Cottam 2 and is split in to two areas: Cottam 3a, to the east of the village of Blyton; and Cottam 3b, to the east of Pilham.

Key challenges

3.28. West Lindsey District and the wider Central Lincolnshire area is facing a range of challenges. These include the requirement to improve social and economic conditions, including health, housing, jobs and the range and quality of facilities, whilst also ensuring that the environment is improved and that growth does not erode the area's environmental and heritage assets, or increase pressure on natural resources.

4. Legislative & Policy Context

4.1. WLDC recognises the application as one made under the Planning Act 2008 (PA2008) for a Development Consent Order (DCO) for development that falls within the definition of energy generating stations set out in section 15 of the PA2008.

4.2. The proposed development comprises the construction, operation and decommissioning of solar arrays for the generation of electricity, also including a Battery and Energy Storage System (BESS), the import/export connection to the National grid and onsite converter stations.

4.3. The PA2008 provides for two different decision making procedures for NSIP applications;

i) Sec. 104 - where a relevant National Policy Statement (NPS) has been designated and has effect; and

ii) Sec.105 – where there is no designated NPS or there is a designated NPS but which does not have effect.

4.4. The application to fall to be determined under section 105 of PA2008 due to electricity generation by solar generating stations being excluded from the scope of NPS' EN-1 and EN-3. Energy storage infrastructure also does not fall within the scope of NPS' EN-1 and EN-3. There is therefore no designated NPS that has effect in relation to the proposed development.

4.5. Section 105 of the PA2008 states that in determining the proposed development, the decision maker must have regard to:

a. Any local impact report (within the meaning given by section 60(3)) submitted to the Secretary of State before the deadline specified in a notice under section 60(2);

b. Any matters prescribed in relation to development of the description to which the application relates, and

c. Any other matters which the Secretary of State thinks are both important and relevant to the Secretary of State's decision.

4.6. The Central Lincolnshire Local Plan (Local Plan) forms the adopted development plan for the West Lindsey district. The Local Plan was adopted on 24th April 2023 and therefore represents a wholly 'up to date' statutory development plan. WLDC considers that the Local Plan should be considered 'important and relevant' for the purposes of section 105 and should be afforded significant weight in the decision making process.

Central Lincolnshire Local Plan (April 2023)

4.7. The Central Lincolnshire Local Plan forms part of the development plan for West Lindsey (replacing the previous Central Lincolnshire Local Plan, adopted in 2017). The Local Plan was adopted on 13th April 2023 and therefore represents an 'up to date' statutory development plan to which significant weight should be afforded in decision making under section 105 of the PA 2008. The full plan is included at Appendix A of this LIR.

4.8. The relevant policies and a brief summary of each are set out are set out below.

Table 4-1 – Central Lincolnshire Local Plan Policy

Policy	Summary
Policy S1: The Spatial Strategy and Settlement Hierarchy	The spatial strategy will focus on delivering sustainable growth for Central Lincolnshire that meets the needs for homes and jobs, regenerates places and communities, and supports necessary improvements to facilities, services and infrastructure. Development should create strong, sustainable, cohesive and inclusive communities, making the most effective use of previously developed land and enabling a larger number of people to access jobs, services and facilities locally.
Policy S2: Level and Distribution of Growth	The economic vision and strategy of this plan is to seek to facilitate the creation of 24,000 new jobs over the plan period, 2018-2040. To help facilitate that target and ensure the provision of new homes is in balance

	with job creation, this plan aims to facilitate the delivery of 1,325 dwellings per year, or 29,150 dwellings over the Plan period.
Policy S10: Supporting a Circular Economy	The Joint Committee is aware of the high energy and material use consumed on a daily basis, and, consequently, is fully supportive of the principles of a circular economy. Accordingly, and to complement any policies set out in the Minerals and Waste Development Plan, proposals will be supported, in principle, which demonstrate their compatibility with, or the furthering of, a strong circular economy in the local area (which could include cross-border activity elsewhere in Lincolnshire).
Policy S11: Embodied Carbon	All development should, where practical and viable, take opportunities to reduce the development's embodied carbon content, through the careful choice, use and sourcing of materials.
Policy S14: Renewable energy	All major development proposals should explicitly set out what opportunities to lower a building's embodied carbon content have been considered, and which opportunities, if any, are to be taken forward.
Policy S15: Protecting Renewable Energy Infrastructure	The Central Lincolnshire Joint Strategic Planning Committee is committed to supporting the transition to a net zero carbon future and will seek to maximise appropriately located renewable energy generated in Central Lincolnshire (such energy likely being wind and solar based). Proposals for renewable energy schemes, including ancillary development, will be supported where the direct, indirect, individual and cumulative impacts on the following considerations are, or will be made, acceptable. i. The impacts are acceptable having considered the scale, siting and design, and the consequent impacts on landscape character; visual amenity; biodiversity; geodiversity; flood risk; townscape; heritage assets, their settings and the historic landscape; and highway safety and rail safety; and ii. The impacts are acceptable on aviation and defence navigation system/communications; and iii. The impacts are acceptable on the amenity of sensitive neighbouring uses (including local residents) by virtue of matters such as noise, dust, odour, shadow flicker, air quality and traffic. Permitted proposals will be subject to a condition that will require the submission of an End of Life Removal Scheme within one year of the facility becoming non-operational, and the implementation of such a scheme within one year of the scheme being approved. Such a scheme should demonstrate how any biodiversity net gain that has arisen on the site will be protected or enhanced further, and how the materials to be removed would, to a practical degree, be re-used or recycled.
Policy S16: Wider Energy Infrastructure	The Joint Committee is committed to supporting the transition to net zero carbon future and, in doing so, recognises and supports, in principle, the need for significant investment in new and upgraded energy infrastructure. Where planning permission is needed from a Central Lincolnshire authority, support will be given to proposals which are necessary for, or form part of, the transition to a net zero carbon sub-region, which could include: energy storage facilities (such as battery storage or thermal storage); and upgraded or new electricity facilities (such as transmission facilities, sub-stations or other electricity infrastructure.
Policy S17: Carbon Sinks	Existing carbon sinks, such as peat soils, must be protected, and where opportunities exist they should be enhanced in order to continue to act as a carbon sink.
Policy S20: Resilient and Adaptable Design	Adaptable design Applicants should design proposals to be adaptable to future social, economic, technological and environmental requirements in order to make buildings both fit for purpose in the long term and to

	minimise future resource consumption in the adaptation and redevelopment of buildings in response to future needs.
Policy S21: Flood Risk and Water Resources	Flood Risk All development proposals will be considered against the NPPF, including application of the sequential and, if necessary, the exception test. Development proposals that are likely to impact on surface or ground water should consider the requirements of the Water Framework Directive.
Policy S28: Spatial Strategy for Employment	In principle, employment related development proposals should be consistent with meeting the following overall spatial strategy for employment. The strategy is to strengthen the Central Lincolnshire economy offering a wide range of employment opportunities focused mainly in and around the Lincoln urban area and the towns of Gainsborough and Sleaford, with proportionate employment provision further down the Settlement Hierarchy
Policy S29: Strategic Employment Sites (SES)	SES will meet large scale investment needs that requires significant land take. Proposals for the development of SES should be progressed through an agreed masterplan which includes a travel plan and associated infrastructure to promote sustainable modes of travel for the site as a whole wherever possible prior to or alongside a planning application. Small scale, ancillary and/or piecemeal development that prevents or otherwise detracts from the delivery of large scale investment on an SES will be refused.
Policy S31: Important Established Employment Areas (IEEA)	IEEA make a substantial contribution to the Central Lincolnshire economy. They are defined as sites located in tiers 1-4 of the Settlement Hierarchy in Policy S1 (Large Villages and above), on sites of 2ha or more and have at least 8,000sqm of ground floor space and with five or more units occupied by different businesses.
Policy S43: Sustainable Rural Tourism	Development proposals within villages named in the Settlement Hierarchy in Policy S1 that will deliver high quality sustainable visitor facilities including (but not limited to) visitor accommodation, sporting attractions, and also including proposals for temporary permission in support of the promotion of events and festivals.
Policy S45: Strategic Infrastructure Requirements	Infrastructure Planning permission will only be granted if it can be demonstrated that there is, or will be, sufficient infrastructure capacity to support and meet all the necessary requirements arising from the proposed development. Development proposals must consider all of the infrastructure implications of a scheme; not just those on the site or its immediate vicinity. Conditions or planning obligations, as part of a package or combination of infrastructure delivery measures, are likely to be required for many proposals to ensure that new development meets this principle. Consideration must be given to the likely timing of infrastructure provision. As such, development may need to be phased. Conditions or a planning obligation may be used to secure this phasing arrangement.
Policy S47: Accessibility and Transport	Development proposals which contribute towards an efficient and safe transport network that offers a range of transport choices for the movement of people and goods will be supported. All developments should demonstrate, where appropriate, that they have had regard to the following criteria: a) Located where travel can be minimised and the use of sustainable transport modes maximised; b) Minimise additional travel demand through the use of measures such as travel planning, safe and convenient public transport, car clubs, walking and cycling links and integration with existing infrastructure; c) Making allowance for low and ultra-low emission vehicle refuelling infrastructure.

Policy S53: Design and Amenity	All development, including extensions and alterations to existing buildings, must achieve high quality sustainable design that contributes positively to local character, landscape and townscape, and supports diversity, equality and access for all.
Policy S54: Health and Wellbeing	The potential for achieving positive mental and physical health outcomes will be taken into account when considering all development proposals. Where any potential adverse health impacts are identified, the applicant will be expected to demonstrate how these will be addressed and mitigated.
Policy S56: Development on Land Affected by Contamination	Development proposals must take into account the potential environmental impacts on people, biodiversity, buildings, land, air and water arising from the development itself and any former use of the site, including, in particular, adverse effects arising from pollution.
Policy S57: The Historic Environment	Development proposals should protect, conserve and seek opportunities to enhance the historic environment of Central Lincolnshire.
	Listed Buildings Permission to change the use of a Listed Building or to alter or extend such a building will be granted where the local planning authority is satisfied that the proposal is in the interest of the building's preservation and does not involve activities or alterations prejudicial to the special architectural or historic interest of the Listed Building or its setting.
	Conservation Areas Development within, affecting the setting of, or affecting views into or out of, a Conservation Area should preserve (and enhance or reinforce it, as appropriate) features that contribute positively to the area's character, appearance and setting.
	Archaeology Development affecting archaeological remains, whether known or potential, designated or undesignated, should take every practical and reasonable step to protect and, where possible, enhance their significance.
Policy S58: Protecting Lincoln, Gainsborough and Sleaford's Setting and Character	**Gainsborough** g) Take into account the Gainsborough Town Centre Conservation Area Appraisal and Gainsborough Town Centre Heritage Masterplan; h) Protect and enhance the landscape character and setting of Gainsborough and the surrounding villages by ensuring key gateways are landscaped to enhance the setting of the town, minimise impact upon the open character of the countryside and to maintain the setting and integrity of surrounding villages
Policy S59: Green and Blue Infrastructure Network	The Central Lincolnshire Authorities will safeguard green and blue infrastructure in Central Lincolnshire from inappropriate development and work actively with partners to maintain and improve the quantity, quality, accessibility and management of the green infrastructure network. Proposals that cause loss or harm to the green and blue infrastructure network will not be supported unless the need for and benefits of the development demonstrably outweigh any adverse impacts. Where adverse impacts on green infrastructure are unavoidable, development will only be supported if suitable mitigation measures for the network are provided.
Policy S60: Protecting Biodiversity and Geodiversity	All development should: a) protect, manage, enhance and extend the ecological network of habitats, species and sites of international, national and local importance (statutory and non-statutory), including sites that meet the criteria for selection as a Local Site; b) minimise impacts on biodiversity and features of geodiversity value;

	c) deliver measurable and proportionate net gains in biodiversity in accordance with Policy S61; and d) protect and enhance the aquatic environment within or adjoining the site, including water quality and habitat. Mitigation of Potential Adverse Impacts Development should avoid adverse impact on existing biodiversity and geodiversity features as a first principle, in line with the mitigation hierarchy. Where adverse impacts are unavoidable they must be adequately and proportionately mitigated. If full mitigation cannot be provided, compensation will be required as a last resort where there is no alternative. Development will only be supported where the proposed measures for mitigation and/or compensation along with details of net gain are acceptable to the Local Planning Authority in terms of design and location and are secured for the lifetime of the development with appropriate funding mechanisms that are capable of being secured by condition and/or legal agreement. If significant harm to biodiversity resulting from development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission will be refused.
Policy S61: Biodiversity Opportunity and Delivering Measurable Net Gains	Following application of the mitigation hierarchy, all development proposals should ensure opportunities are taken to retain, protect and enhance biodiversity and geodiversity features proportionate to their scale, through site layout, design of new buildings and proposals for existing buildings with consideration to the construction phase and ongoing site management.
	Biodiversity Net Gain The following part of the policy applies unless, and until, subsequently superseded, in whole or part, by national regulations or Government policy associated with the delivery of mandatory biodiversity net gain arising from the Environment Act 2021. Where conflict between the policy below and the provisions of Government regulations or national policy arises, then the latter should prevail.
Policy S62: Area of Outstanding Natural Beauty and Areas of Great Landscape Value	**Areas of Great Landscape Value** Areas of Great Landscape Value (AGLV) are locally designated landscape areas recognised for their intrinsic character and beauty and their natural, historic and cultural importance. A high level of protection will be afforded to AGLV reflecting their locally important high scenic quality, special landscape features and sensitivity. Development proposals within, or within the setting of, AGLV shall: e) conserve and enhance the qualities, character and distinctiveness of locally important landscapes; and f) protect, and where possible enhance, specific landscape, wildlife and historic features which contribute to local character and landscape quality; and g) maintain landscape quality and minimise adverse visual impacts through high quality building and landscape design; and h) demonstrate how proposals have responded positively to the landscape character in relation to siting, design, scale and massing and where appropriate have retained or enhanced important views, and natural, historic and cultural features of the landscape; and i) where appropriate, restore positive landscape character and quality. Where a proposal may result in adverse impacts, it may exceptionally be supported if the overriding benefits of the development demonstrably

	outweigh the harm – in such circumstances the harm should be minimised and mitigated through design and landscaping.
Policy S66: Trees, Woodland and Hedgerows	Development proposals should be prepared based on the overriding principle that: • the existing tree and woodland cover is maintained, improved and expanded; and • opportunities for expanding woodland are actively considered and implemented where practical and appropriate to do so.
	Hedgerows Proposals for new development will be expected to retain existing hedgerows where appropriate and integrate them fully into the design having regard to their management requirements. Proposals for new development will not be supported that would result in the loss of hedges of high landscape, heritage, amenity or biodiversity value unless the need for, and benefits of, the development clearly outweigh the loss and this loss can be clearly demonstrated to be unavoidable. Development requiring the loss of a hedgerow protected under The Hedgerow Regulations will only be supported where it would allow for a substantially improved overall approach to the design and landscaping of the development that would outweigh the loss of the hedgerow. Where any hedges are lost, suitable replacement planting or restoration of existing hedges, will be required within the site or the locality, including appropriate provision for maintenance and management.
Policy S67: Best and Most Versatile Agricultural Land	Proposals should protect the best and most versatile agricultural land so as to protect opportunities for food production and the continuance of the agricultural economy.

Central Lincolnshire Statement of Community Involvement (January 2023)

4.9. The Statement of Community Involvement (SCI) outlines how the Central Lincolnshire Joint Strategic Planning Committee (CLJSPC) expects to involve and consult the public and stakeholders when preparing planning policy documents, namely local plans and supplementary planning documents. This may be used to inform WLDC's approach to consultation during the DCO examination.

Lincolnshire County Council

4.10. Lincolnshire County Council (LCC) is the county council that governs the non-metropolitan county of Lincolnshire, apart from the areas governed by the unitary authorities of North Lincolnshire and North East Lincolnshire. The council is responsible for public services such as education, transport, highways, heritage, social care, libraries, trading standards, and waste management.

4.11. The council has several policies, strategies and plans which cover planning and the environment. Those which are relevant to the solar DCOs are set out below.

Table 4-2 – Lincolnshire County Council Policy Documents

Policy Document	Summary
Carbon Management Plan (Jan 2019)	The Carbon Management Plan (CMP) sets out their strategy and action plan for continuing to reduce carbon emissions over the next 5 years.
Joint Lincolnshire Flood Risk and Water Management Strategy 2019-2050	LCC is the Lead Local Flood Authority (LLFA) for the administrative county of Lincolnshire. Because of this role, since 2010 the Council has been responsible for implementing and monitoring a local flood risk management strategy. The purpose of the strategy is to manage the impact of flood risk to people, businesses and the environment across Lincolnshire.

Policy Document	Summary
Green Masterplan	The Green Masterplan is a multi-year programme running until 2050 to ensure that LCC meet the national carbon reduction targets of being net zero by 2050. The Green Masterplan is backed up by an Initial Action Plan and has three guiding principles: Don't waste anything; consider wider opportunities; and take responsibility and pride.
Local Enforcement Plan (Nov 2020)	This plan sets out our priorities for investigation, explains what will be investigated and what will not, and the priorities for responses to complaints and the timescales for these responses. Although this is plan does not refer to Nationally Significant Infrastructure Projects, it is likely to be a material consideration during the construction phase of the development.
Local Transport Plan 5	This plan is designed to cover the short, medium, and longer-term time horizons for transport and highways for the whole of Lincolnshire. The plan does not cover the impacts of construction traffic, but it is likely to be a material consideration in LLC's stance on the DCOs, particularly during construction and how this could impact the plan.
Statement of Community Involvement (Sep 2019)	The statement of community involvement outlines how the council plans to involve and consult the public and stakeholders in relation to the minerals and waste local plan. This may be used to inform LCC's approach to consultation during the DCO examination.
Travel plan guidance (Dec 2021)	This guidance sets out the highways authority requirements for development travel plans and identifies when they are required in support of a planning application.
Minerals and waste local plan	The minerals and waste development scheme identifies the documents that make up the minerals and waste local plan and sets out the timetable for preparation and review. Part of the Grid Connection Corridor is also located within a Mineral Safeguarding Area for Sand and Gravel. However it was confirmed with NCC and LCC that there is not a need for a standalone Mineral Safeguarding Assessment to accompany the DCO Application.

Neighbourhood Plans

4.12. Thirteen Neighbourhood Plans within the WLDC administrative area are either being prepared or adopted in close proximity to the Order Limits of the DCO application and/or are likely to experience impacts from the proposed development.

4.13. The following Neighbourhood Plans are adopted:

- Corringham;
- Gainsborough;
- Hemswell and Harpswell;
- Lea;
- Morton;
- Saxilby with Ingleby;
- Sturton by Stow; and
- Willoughton.

4.14. The following Neighbourhood Plans are being prepared (at draft stage):

- Blyton;
- Ingham;
- Laughton; and
- Upton and Kexby.

National Policy

4.15. National policy governing the principle of development for renewable energy proposals within its scope is the National Policy Statement (NPS) for renewables EN-3, which should be read together with the Overarching NPS for Energy, EN-1.

4.16. Given that EN-3 does not have any technology-specific policy relevant to solar photovoltaic projects, it is not considered that it has effect for the purposes of section 104 of the Planning Act 2008, as has been recognised by the Applicant. Nonetheless, it is a material planning consideration in the DCO process but not the only policy that the proposal needs to take into account.

4.17. A review of the energy NPSs has resulted in the publication of a draft EN-1 and EN-3, which are not yet designated (and therefore also do not 'have effect' for the purposes of section 104) but have clear relevance to the Cottam Solar Park not least due to the inclusion of solar photovoltaic-specific policy in draft EN-3. It is WLDC's view that these NPSs, both current and draft, are likely to be matters the Secretary of State will consider relevant and important.

4.18. Section 105 of the Planning Act 2008 states:

> *"**105 Decisions in cases where no national policy statement has effect***
>
> *(1) This section applies in relation to an application for an order granting development consent if section 104 does not apply in relation to the application.*
>
> *(2) In deciding the application, the Secretary of State must have regard to –*
>
> *(a) any local impact report (within the meaning given by section 60 (3)) submitted to the Secretary of State before any deadline specified in a notice under section 60 (2),*
>
> *(b) any matters prescribed in relation to development of the description to which the application relates, and*
>
> *(c) any other matters which the Secretary of State thinks are both important and relevant to the Secretary of State's decision."*

4.19. This LIR may refer to the NPSs, primarily EN-1 and EN-3, to highlight potential compliance issues in some of the topic areas but WLDC are mindful of the role section 105 of the Planning Act 2008 plays in this process.

NPS EN-1 – Overarching Policy Statement for Energy

4.20. NPS EN-1 sets out the government's commitment to increasing renewable generation capacity, with a recognition that much of the short-term delivery will derive from onshore and offshore wind.

4.21. The generation of energy from other sources, including solar, is not included in the scope of NPS EN-1. WLDC acknowledge that the solar generating station such as this application comprise a development that comprises an NSIP and that some policies within EN-1 are relevant to the determination of such applications.

NPS EN-3 – National Policy Statement for Renewable Energy Infrastructure

4.22. NPS EN-1 provides further policy specific to renewable electricity generating technologies. As with EN-1, it expressly only relates to energy from biomass, onshore wind and offshore wind.

4.23. Due to solar being expressly excluded from NPS EN-3, WLDC hold the view that it cannot be considered either 'important or relevant' for the determination of the application.

NPS EN-5 – National Policy Statement for Networks

4.24. Whilst providing policy for long-distance transmission systems (400kv and 275kv lines), NPS EN-5 also covers associated infrastructure such as substations and converter stations.

4.25. Due to the scope of the proposed development, WLDC consider NPS EN-5 to be an important and relevant matter with regard to the relevant associated development of the proposed application.

Draft National Policy Statements for Energy

4.26. The government have published consultation drafts of revisions to NPSs EN-1 to EN-5 inclusive.

4.27. WLDC consider that as the draft NPSs have not been designated, they do not have effect for decision making under section 104 the PA2008. Their publication does not change the decision making requirement under section 105.

4.28. WLDC acknowledge that the emerging NPSs provide an indication of the government's future approach to the delivery of electricity generation technologies with the objective of meeting the UKs net-zero commitments. As a consequence, WLDC consider that there may be elements within the emerging NPSs that may be considered to be important and relevant under the provision of section 105, however the weight that should be afforded to it should be lower than that of the adopted NPSs and the adopted statutory development plans.

The National Planning Policy Framework

4.29. The National Planning Policy Framework (NPPF) sets out the governments planning policies for England. The NPPF does not include policies specific to NSIPs.

4.30. The NPPF nonetheless provides guidance on the requirement for good design, promoting healthier communities, conserving the historic environment, conserving the natural environment, sustainable transport and meeting the challenges of climate change. With due regard to the scope of the policy at a national level, WLDC consider the NPPF to be an important and relevant matter for the determination of the application under section 105 of the PA2008.

Other Relevant Policy

4.31. In addition to the above, WLDC consider the following policy to also be relevant and important for the determination of the application under section 105:

- Powering up Britain (March 2023);
- The British Energy Security Strategy (2022);
- The National Infrastructure Strategy (2020);
- The Energy White Paper: Powering our Net Zero Future (2020); and
- A Green Future: Our 25 year Plan to Improve the Environment (2018).

Summary

4.32. There are a number of relevant local policies which the Examining Authority (ExA) and/or the Secretary of State (SoS) may consider relevant and important.

4.33. Each of the issue specific sections sets out an overview of key policies relevant to that topic.

5. West Lindsey District Council Identified Impacts

Introduction

5.1. The following sections identify the relevant policies within the development plan and other local policy, the key issues raised by the proposed development and the extent to which the applicant addresses them and thus the proposal complies with local policy.

5.2. Where the National Policy Statements refer to the Infrastructure Planning Commission (IPC), this is now the Secretary of State (SoS).

6. Alternative and Design Evolution

Summary

6.1. [ADE1] The Applicant has stated that 'it would be highly unlikely that a single site of this size would be available within sufficient proximity to the Cottam Points of Connection (POC)'. However, the Gate Burton scheme, which will also utilise the Cottam POC, has demonstrated that a largely contiguous scheme is achievable. Similarly the proposed Tillbridge application have also shown that a large contiguous scheme is achievable.

6.2. [ADE2] The Scheme's study area of 20km is more than twice the size of the Gate Burton study area (8km).

6.3. [ADE3] There is a lack of focus on the cumulative transport impacts during the construction phase within the grid corridor.

6.4. [ADE4] The Applicant suggests that required site area for a 600MW solar would be 1,300 hectares excluding cable connection routes. This rationale is questioned as the Gate Burton is 823 ha and would provide approximately 531MW. This is 88% of the 600MW Cottam has. If 1,300 hectares are required for Cottam, then Gate Burton would require a site area of 1,100 ha. This is not the case and shows ineffective use of land by Cottam. If the Scheme had followed the Gate Burton's principles, then Cottam should only need approximately 990 hectares. Moreover, the entirety of the Longfield Solar Farm was contained within 453 hectares of land for PV Panels, BESS, Grid Connection Route, Bulls Lodge Substation Extension, Site Access Works and associated infrastructure including landscaping and biodiversity measures.

6.5. [ADE5] The Applicant consistently uses phrases such as 'network of sites' and does not follow a contiguous design approach. The division of the Scheme into four distinct units, i.e. Cottam 1, 2, 3a and 3b, demonstrates the lack of good design. This is particularly in relation to Gate Burton and the forthcoming Tillbridge schemes within West Lindsey where a contiguous scheme has been designed.

Legislation and Policy Context

National Policy

6.6. When considering assessment principles, adopted National Policy Statement (NPS) EN-1 paragraph 4.4.1 states that '*As in any planning case, the relevance or otherwise to the decision-making process of the existence (or alleged existence) of alternatives to a proposed development is in the first instance a matter of law, detailed guidance on which falls outside the scope of this NPS. From a policy perspective this NPS does not contain any general requirement to consider alternatives or to establish whether the proposed project represents the best option*'. This paragraph is retained without amendment in Paragraph 4.2.11 of the Draft NPS EN-1 (Ref 3-4).

6.7. NPS EN-1 paragraph 4.4.3 goes on to state that: '*where (as in the case of renewables) legislation imposes a specific quantitative target for particular technologies… the IPC should not reject an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site, and it should have regard as appropriate to the possibility that all suitable sites for energy infrastructure of the type proposed may be needed for future proposals*'.

6.8. Paragraph 4.2.13 of Draft NPS EN-1 similarly states that: "*the SoS should not refuse an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site*".

6.9. In view of the above, there is no general policy or requirement to provide consideration for alternative sites. However, there is a requirement to provide information for reasonable alternatives as required under the Environmental Impact Assessment (EIA) Regulations 2017, as set out below.

6.10. NPS EN-1 and Draft NPS EN-1 do, however, highlight that in addition to the requirement under the EIA Regulations, there are other specific legislative requirements and policy circumstances which require the consideration of alternatives.

6.11. There are policy requirements to consider alternatives where there are likely significant effects on biodiversity and geological conservation interests; where there is development in areas of flood risk; and where there is development within nationally designated landscapes (see sections 5.3, 5.7 and 5.9 of NPS EN-1 and 5.4, 5.8 and 5.10 of Draft NPS EN-1). Paragraph 4.4.3 of NPS EN-1 (paragraph 4.2.13 in the Draft NPS EN-1) states '*where there is a policy or legal requirement to consider alternatives the applicant should describe the alternatives considered in compliance with these requirements*'.

Legislation

6.12. Paragraph 2 of Schedule 4 of the Environmental Impact Assessment (EIA) Regulations requires '*A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects*'.

6.13. There is also a requirement under the Habitats Directive, as transposed into UK law by the Conservation of Habitats and Species Regulations 2017.

Applicant's Approach to Assessment

Approach to site selection and design

6.14. The applicant has submitted an 'Concept Design Parameters and Principles' as a submitted application document (Doc. Ref. EN010133/APP/C7.15). The document sets out the design parameters and principles by which the Scheme has been designed and the Environmental Impact Assessment has been undertaken. It will be secured by Requirement 5 in Schedule 2 to the draft DCO (dDCO) (Doc. Ref. EN010133/APP/C3.1_A) in order to prescribe the guiding design principles and parameters to inform the detailed design of the Scheme post DCO consent.

6.15. This Concept Design Parameters and Principles document defines the key design parameters which reflect the worst-case scenario adopted in the Environmental Impact Assessment that has been undertaken for the Scheme. As the detailed design of the Scheme will be in accordance with these assessed parameters, the conclusions of the Environmental Statement (ES) will be upheld.

6.16. The Concept Design Parameters and Principles have been set out in accordance with the description of the Works Numbers as set out in Schedule 1 to the Draft DCO. Where required, the document refers to other submitted DCO application documentation that will be secured by a Requirement in the Draft DCO (such as the Outline Construction Environmental Management Plan or Outline Landscape and Ecological Mitigation Plan). The outline management plans will set out further details of the design, parameters and mitigation measures that will be complied with as part of the construction, operation, maintenance and decommissioning of the Scheme.

6.17. For each component of the Scheme, the parameter has been defined by the following:

- Location – the location of the Scheme component within the Scheme as assessed within the ES;
- Scale – either a minimum or maximum parameter which has been assessed in the ES; and
- Design – relevant design parameter or principle which has been assessed in the ES.

Environmental Impact Assessment

6.18. Chapter 5: Alternatives and Design Evolution of the ES (Doc. Ref. EN010133/APP/C6.2.5) sets out the applicant's approach to the alternatives that were considered during the design of the Scheme, against the requirement to adhere to the legislative and policy requirements.

6.19. Section 5.5 of the Chapter 5 sets out the Applicant's approach to the selection of the Scheme's proposed location. This process and confirmation of its suitability when considered against potential alternative sites is summarised in the following sections and set out in detail in Appendix 5.1: Site Selection Assessment of this ES (Doc. Ref. EN010133/APP/C6.3.5.1].

6.20. Section 4 of the Appendix 5.1: Site Selection Assessment concludes the Applicant's assessment of the site selection.

6.21. The applicant adopted a five-stage site selection process, summarised as follows:

- Stage 1 – Identification of the Area of Search;
- Stage 2 – Exclusion of Planning, Environmental and Spatial Constraints;
- Stage 3 – Identifying Potential Solar Development Areas;
- Stage 4 – Evaluation of Potential Solar Development Areas (PDAs); and
- Stage 5 – Widening the Search to consider Grade 3 agricultural land.

Stage 1 – Identification of the Area of Search

6.22. The Applicant considered the key factors as important in choosing a site for solar development, these are set out in further detail below:

- Location of the site – irradiation (sunlight) levels and the topography of the land are key considerations in determining the location of solar development. As the whole of England is suitable for solar gains and therefore it was not considered that there are any restrictions on where developments should be.
- Viable grid connection – it is important and practical for a scheme to have access to an existing grid connection.
- Site Availability – it was considered that, for a grid connection of 600MW, a site size of approximately 1,300 ha (excluding cable route) was needed.

6.23. It is noted that the Applicant undertook discussions with National Grid in which they were notified of grid capacity at West Burton, Cottam, and High Marnham Power Stations. The available capacity at these site came about due to the closure of the coal fired power stations at these sites.

6.24. Due to the immediate availability of these Points of Connection (POCs), the Applicant did not consider any further alternative grid connection points. Through further discussion with National Grid on the Cottam POC, National Grid advised at that stage that a connection at Cottam would be preferred over connection at High Marnham because fewer upgrade works to National Grid's transmissions assets would be required at the POC and it would therefore be more straightforward, quicker to deliver and more economical. The Applicant therefore made a grid connection application to National Grid for connection at Cottam Power Station and an offer was made by National Grid for 600MW.

6.25. The Applicant also made an application for a grid connection at West Burton Power Station for 480MW, this is the subject of a separate DCO application.

6.26. As set out above, there is an assumption that to generate 600MW the site would need to be the size of approximately 1,300 ha (excluding cable route) was needed. This is based on a calculation that a land area of approximately 75ha of solar panels (100ha including landscaping and ecology mitigation land) is required to provide an NSIP solar scheme with a generating capacity of 50MW.

6.27. The Applicant generally seeks to find a site which is around 10% larger than is needed for the grid connection offer. This principle applies to solar projects within a generating capacity of under 50MW and NSIP scale solar projects. This larger site size allows flexibility for the accommodation of additional mitigation measures and other constraints that may become known through the design development process. It was considered that it would be highly unlikely that a single site of this size would be available within sufficient proximity to the Cottam POC.

6.28. In addition to the broad considerations set out above, an initial search area was identified at a 5km radius from the POC, however this was later expanded with the clear preference of identifying land as close to the POC as possible, the search area was enlarged incrementally until suitable options were found within a 20km radius which is considered by the Applicant to be a viable cable connection distance for a solar project of this scale.

Stage 2 – Exclusion of Planning, Environmental and Spatial Constraints

6.29. the mapping of planning, environmental and spatial constraints which have been identified through a review of relevant national planning policies. The constrained areas have been excluded from the area of search identified at Stage 1 and are therefore not considered as suitable locations for the Scheme. The following spatial constraints have been mapped and excluded from further consideration:

- Agricultural Land Classification and Land type;

- Designated international and national ecological and geological sites;
- Nationally designated landscapes; and
- Proximity to sensitive human receptors.

6.30. Following the initial assessment of the 5km search area using the above constraints, it became clear that sites outside of this area would need to be assessed as insufficient land was available. The study area was therefore increased to a 20km radius.

6.31. During the site selection process, the sources that were relied upon were data from the Natural England Agricultural Land Classification (ALC). The Natural England maps do not differentiate between grades 3a and 3b. Therefore, at Stage 2 all land in Grades 1, 2 and 3 was excluded and the focus was on trying to identify suitable sites within areas of Grade 4, 5 or unclassified land outside of other identified planning and environmental constraints.

Stage 3 – Identifying Potential Solar Development Areas

6.32. Stage 3 of the assessment then applied key operational criteria for large scale solar development – site size and land assembly; and site topography to further refine the unconstrained areas identified at Stage 2.

6.33. The Applicant's analysis regarding the minimum area for large scale solar to be economically viable identified a threshold of at least 40ha of contiguous land for an individual site. This is the minimum site size threshold considered by the Applicant to be viable to form part of a network of sites, making up an NSIP scale scheme, in close proximity covering an area of approximately 1300ha.

6.34. Individual site size and development area thresholds were identified by the Applicant following economic analysis of the MW output per hectare, taking into consideration infrastructure costs and the need for land to provide appropriate environmental mitigation. This resulted in a site threshold of 40 ha being applied. A smaller development area results in higher unit costs and an assessment was made as to the maximum cost and therefore minimum site area threshold that would be viable for the Scheme to hit the target financial metrics.

6.35. Topographical constraints were also identified and mapped with all land with a 3% or less gradient, which is considered to be very flat and optimal for solar generation, being considered as potential solar development areas.

6.36. Land remaining in the search area after Stage 2, operational criteria were applied. This included site size, land assembly, site topography, access requirements and availability of brownfield land. The output of Stage 3 was the identification land suitable for solar development.

6.37. The use of previously developed (brownfield) land, commercial rooftops and alternative locations proposed by consultees through the statutory consultation stage (as discussed above) were also considered. No brownfield land or commercial rooftops that meet the minimum individual site size threshold or the area of approximately 1300ha required for a network of sites in close proximity for the whole Scheme were identified within the 20km search area.

6.38. The Applicant provided a detailed explanation as to why commercial rooftops were not considered suitable, this includes: size of rooftops, multiple landowner issues.

Stage 4 – Evaluation of Potential Solar Development Areas (PDAs)

6.39. Stage 4 then assessed the five potential development areas (PDAs) which were identified in Stage 3. These areas were:

- PDA 1 Gainsborough/Laughton;
- PDA 2 RAF Scampton;
- PDA 3 West Lincoln/Thorpe on the Hill;
- PDA 4 Besthorpe; and
- PDA 5 Bothamsall.

6.40. Each PDA was evaluated against planning, environmental and other operational assessment indicators which were derived from national and local planning and environmental policy objectives and the operational requirements of the Scheme.

6.41. The indicators included biodiversity, landscape and visual amenity, cultural heritage, flood risk, land use, access for construction, as well as operational factors related to deliverability such as grid

connection feasibility, topography and shading to consider the suitability of these areas for large scale solar development.

6.42. Ultimately, following the evaluation stage, none of the PDA's on Grade 4 and 5 agricultural land and unclassified land proved suitable for development due to significant constraints being identified. These constraints include land use, ecological and landscape factors.

6.43. The assessment then proceeded to consider potential areas of Grade 3 Agricultural land. This is set out in Stage 5 below.

Stage 5 – Widening the Search to Consider Grade 3 Agricultural Land

6.44. Following the discounting of the PDA's on Grade 4 and 5 agricultural land and unclassified land, the site search focused on the areas of Grade 3 agricultural land within the 20km search area. Residual Grade 3 areas were identified following the exclusion of the same high-level constraints previously considered for the Grade 4,5 and unclassified land at stages 2 and 3 above.

6.45. Other proposed solar NSIP projects located on Grade 3 land within the 20km search area were discounted because they were not available to accommodate the Scheme as they were already being used by other schemes. These include West Burton Solar Project; Gate Burton Energy Park; and Tillbridge Solar.

6.46. Land agents were contacted regarding potentially willing landowners within the area. The availability of willing landowners is an important consideration because it is typical for the land to be leased rather than permanently acquired due to solar farms consisting of temporary structures. The land agents used their professional knowledge to provide details of potentially willing landowners with large scale landholdings within the 20km search area.

6.47. These were assessed against the same detailed range of planning, environmental and operational considerations used to assess the Stage 4 PDAs. Other Grade 3 land either did not have willing land owners; were smaller landholdings; or were subject to planning and environmental constraints. These plots were not investigated further.

Results of Assessment

6.48. The Applicant sets out the results of the assessment for each of the five PDAs identified on Grade 4 and 5 agricultural land and unclassified land, which were discounted as unsuitable following this process because they scored poorly in the assessment.

6.49. It then states that the results of the assessment of each PDA identified on Grade 3 land against the same planning, environmental and operational criteria. It also includes the Scheme which was identified at this stage as part of the Grade 3 land assessment.

6.50. Four PDA's are described and evaluated alongside the Scheme. Three of the PDAs performed worse than the Scheme location and one performed equally well. This was a site near to High Marnham Power Station where a grid connection was not offered by National Grid at the time of the site selection process as it was considered to be less favourable due to required upgrade works. These sites were therefore discounted in favour of the Scheme's location.

6.51. The specific Scheme Sites were chosen following the RAG assessment work (which considered a range of planning, environmental and operational criteria) and through discussion with the landowners regarding areas of their land holdings that they were prepared to allow solar development on. The Sites are within four land ownerships, and this small number of landowners is advantageous in terms of minimising project complexity, legal complexity and cost.

6.52. Detailed ALC surveys were undertaken and the initial red line boundary of the Scheme was reduced. This means that approximately 96% of the application is not located in land considered best and most versatile (BMV).

6.53. The Applicant has sought to exclude Grade 2 and 3a land from the Scheme so far as is practicable, and to keep good quality land in agricultural use. The BMV land that has been taken is justified by factors related to their location and context within the Scheme, the wider landholdings, and in relation to adjacent and surrounding land.

Alternative Technologies

6.54. Justification is proved as to why other types of low-carbon forms of electricity generation for utilising the existing Cottam Power Station POC.

Alternative Layouts for Solar Panel Areas

6.55. The layout of the solar panels was informed by implementing blanket parameters across the development site to ensure consistency of approach. Parameters such as offset distances were informed by the technical consultant team based on their professional judgement and previous experiences. Once applied, the remaining site area was designated the “developable area” for the solar array, inverters, substation, and access roads.

Alternative Substation Locations

6.56. The positioning of a substation within each of the Sites, and a main substation near to the point of connection, are requirements of the Scheme driven by electrical design. The main considerations were implemented as blanket parameters across the development site to ensure consistency of approach, however site-specific requirements – led by the substation size – were also included. Parameters such as offset distances were informed by the technical consultant team based on their professional judgement and previous experiences. Once applied, a RAG assessment was undertaken at each of the sites to determine the most suitable areas within the developable area for the positioning of the substations.

Alternative Cable Routes

6.57. The proposed Cable Route Corridor has been refined and reduced from that set out at earlier stages of the project.

6.58. Options for open trenching, moling, micro tunnelling and horizontal directional drilling (HDD) were explored for the watercourse crossings, with a technical preference for open trenching where possible, but HDD was eventually chosen as the best approach to minimise disturbance to habitat following further ecological survey work.

Impacts and Issues

Positive

6.59. The Scheme sought to exclude BMV land from the Scheme so far as is practicable.

Neutral

6.60. None.

Negative

6.61. The design of the Scheme does not seek to create a contiguous site and treats the ‘individual sites’ as ‘part of a network’. This suggests that the Scheme is a considered a series of separate solar farms that connect together in order to connect to the Cottom POC.

6.62. A search area of 20km is considered significant. This is particularly large when considering the Gate Burton search area was only 8km and was considered the maximum viable distance for a new solar farm. This is because the further a solar farm is from the point of connection, the less efficient transmission to the grid becomes and the connection becomes significantly more costly.

6.63. The assessment does not consider construction access point via two-way highways to minimise ecological and traffic impacts.

6.64. The project has failed to avoid all BMV agricultural land. The lifespan of the project (40 years) is such that the impact will have the effect of being permanent. No evidence or basis upon which to proclaim that the land would be improved, or able to be used for agriculture post-decommissioning.

6.65. The assessment considers national landscape designations but does not appear to carry out a detailed assessment of the impact of local landscape character, including the impact on the designated Area Of Great Landscape Value (AGLV), and visual effects.

6.66. The use of construction access points from single lane minor roads despite also proposing two from two-way highways. The justification for the inclusion of these access points is not provided.

6.67. Lack of detailed consideration of cumulative transport impacts during the construction phase within the grid corridor. A commitment to work collaboratively is expressed, however it appears that limited consideration was given to the potential impact (5-7 years in sequence or 2-3 years concurrently) at the site selection stage.

7. Landscape and Visual Impact Assessment

Summary

7.1.1. The list below outlines the main points arising from the review of the Landscape and Visual Impact Assessment (LVIA) chapter of the Environmental Statement (Doc. Ref. EN010133/APP/C6.2.8) for the Cottam Solar Project:

- [LV1] The Zone of Theoretical Visibility (ZTV) models use DTM supplemented with separately derived site data rather than Digital Surface Model (DSM) so there is potential for error.
- [LV2] There are a several impacts during construction and operation that are considered not significant or beneficial. This differs from the Gate Burton solar scheme which assesses the Scheme to have an adverse impact on the landscape despite having a smaller footprint than the Cottam scheme.
- [LV3] There is a limited assessment in relation to the impact on road users.
- [LV4] The Applicant assesses that there will be a negligible or beneficial cumulative impact to the landscape. This assessment is based on Cottam being constructed and in operation alongside the Gate Burton, Tillbridge and West Burton solar schemes mitigation during operation. However, at paragraph 18.7.112 of the Socio-economic chapters (Doc. Ref. EN010133/APP/C6.2.18) states that the Scheme will '*have a long-term impact on the landscape character of some tourism and recreation receptors that are reliant on the landscape context for their value, such as viewpoints, landmarks, and cultural heritage assets*'. This contradicts the findings in the LVIA.
    - In addition to the above, the Gate Burton scheme has assessed a cumulative moderate adverse impact based on the same schemes. It is unclear how the Applicant has reached their conclusion, particularly as the landscape receptors are subdivided and an overall impact on the landscape does not appear to be forthcoming.
    - It is not understood how an argument can be made that the construction of extensive solar farm will lead to an 'improvement' in local or regional landscape character, involving the introduction of significant industrial elements (panels, substations and related infrastructure – security fencing/lighting etc). The assessment does not address the negative impact to landscape character that would occur from the introduction of these industrial elements ('detractors' when considering local landscape character).
- [LV5] In paragraph 8.5.3 of the LVIA chapter, the Applicant refers to Cottam 1 as '*a multiple collection of fields clustered within an area of countryside*'. Similar language on collection of fields is used for Cottam 3a. Whilst it is noted that the Alternatives and Design Evolution chapter explains the rationale for the site selection, the design of the Scheme seems sporadic and a piecemeal approach has been taken designing the Scheme.
- [LVIA 6] The Applicant's approach to using a 'network of sites' will result in each site requiring an electrical substation. This is recognised in the LVIA as having a likely significant in-combination landscape effects at the construction and operation (Year 1) stages for the substation generating stations at Cottam 1, West A, Cottam 1 West B, Cottam 2, Cottam 3a and 3b substation Sites. These effects would be Adverse with a Moderate significance of effect. The presence of the substations will remain evident in the landscape as a prominent feature due to its size, scale and discordant nature with the surrounding rural land use. If the Scheme's design was contiguous in nature, it is not believed that the need for several substations would be required, as demonstrated in the Gate Burton scheme.
- [LV7] Planting to integrate and screen the development may reduce visual impact, but this is unlikely to exclude all evidence of the development. Planting may help reinforce the woodland features of 'Wooded Vales', but the open nature of the wider agricultural

landscape is a key characteristic – extensive planting in areas that are otherwise open agricultural landscapes would not necessarily be in keeping and may obscure these views – as noted in the West Lindsey Landscape Character Assessment 1999.

- [LV8] The solar panels/arrays are clearly the most intrusive elements – it is accepted that the impact of the grid connection itself may be minimal if cables are buried and features re-established (hedgerows etc), but this planting will take time to establish – especially if it is re-disturbed by consecutive solar farms.
- [LV9] In terms of cumulative effects, the ES (EN010133-000250-C6.2.8 page 241 onwards) claims 'Beneficial' effects in relation to Contributors to Landscape Character – in relation to 'Nationally and Locally Designated Landscape' and 'Ancient Woodlands and Natural Designations' – but does not justify why these effects would be Beneficial (for both it states that impacts would be 'Not Significant').
- [LV10] In relation to treatment of the effects as 'temporary' it is worth noting that impacts will be of long-duration 40 years plus (which could be two generations). Although impacts may be reversible, they are not short-term.
- [LV11] The ES has considered Cumulative Effects – but appears to be on an incremental basis only – i.e. what difference would the Cottam proposal make in addition to the others. The cumulative figure included in the ES for Cottam below (Fig 8.15.2) shows that all 7 of the proposed solar farms considered would be seen in views from many locations along the cliff.
- [LV12] Neither this assessment nor others consider how many solar projects are 'acceptable' – or which combination of projects that would be acceptable would be the least damaging/intrusive re landscape character and views. Something that should be considered overall.

Policy Context

National Policy

7.2. National Policy Statement (NPS) EN-1 states that the ExA needs to consider the design of a scheme carefully. They should have regard to siting, operational and other relevant constraints the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate.

7.3. For development in other areas, paragraph 5.9.15 of NPS EN-1 states that the ExA should '*judge whether any adverse impact on the landscape would be so damaging that it is not offset by the benefits (including need) of the project*'.

7.4. Para 5.9.16 sets out that the ExA should '*consider whether any adverse impact is temporary, such as during construction, and/or whether any adverse impact on the landscape will be capable of being reversed in a timescale that the IPC considers reasonable*'.

7.5. The National Planning Policy Framework (NPPF) 2023 states that planning decisions should contribute to and enhance the natural and local environment. Paragraph 174(b) sets out the ways in which decisions should recognise the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.

Local Policy

Central Lincolnshire Local Plan (2023)

7.6. The Central Lincolnshire Local Plan policies which are relevant to the scheme are set out below.

7.7. Policy S53 states all development must achieve high quality sustainable design which contributes positively to the local character and landscape. Development should

- Be based on a sound understanding of the context, integrating into the surroundings and responding to local history, culture and heritage.
- Relate well to the site.

- Protect any important local views into, out of or through the site.
- Reflect the identity of area and contribute to the sense of place.

7.8. Policy S62 (applies to western part of the Scheme) requires proposals within, or within the setting of, AGLV to:

- Conserve and enhance the qualities, character and distinctiveness of locally important landscapes.
- Protect, and where possible enhance, specific landscape, wildlife and historic features which contribute to local character and landscape quality.
- Maintain landscape quality and minimise adverse visual impacts through high quality building and landscape design.
- Demonstrate how proposals have responded positively to the landscape character in relation to siting, design, scale and massing and where appropriate have retained or enhanced important views, and natural, historic and cultural features of the landscape.
- Where appropriate, restore positive landscape character and quality.

Key Impacts

7.9. The Applicant has presented their findings on a site-by-site basis taking each of these individual contributors at the broad scale in turn, which are regional landscape character types (RLCTs) set out within the East Midlands Regional Landscape Character Assessment which are:

- RLCT 3a Floodplain Valleys;
- RLCT 4a Unwooded Vales; and
- RLCT 4b Wooded Vales.

7.10. The assessment has also provides a summary of the landscape effects of the individual contributors to the landscape baseline at a fine-grained scale and draws upon published information, desktop studies and fieldwork to identify the individual contributors to landscape character. These are assess under the following headings:

- Land Use;
- Topography and Watercourses;
- Communications and Infrastructure;
- Settlements, Industry, Commerce and Leisure;
- Public Rights of Way and Access;
- Nationally and Locally Designated Landscape;
- Scheduled Monuments, Listed Buildings, Conservation Areas and Registered Parks and Gardens; and
- Ancient Woodlands and Natural Designations.

7.11. This LIR will focus on the in-combination landscape and visual effects resulting from the combination of individual effects at Sites and the Cable Route Corridor and the combined effects of the Cumulative Sites.

Construction and Decommissioning

Positive

7.12. There are no positive impacts during construction.

Neutral

7.13. National Landscape Character Areas:

- These are not considered further within the LVIA Chapter as the assessment relies on the regional and local landscape character assessment as the baseline and to form judgements.

7.14. Regional Landscape Character Areas

- There are no likely significant in-combination landscape effects for the construction, operation (Year 1 and Year 15) and decommissioning stages of the Scheme.

7.15. Topography and Watercourses:

- There would not be the removal of, or changes in individual topography or watercourse elements or features of the landscape as a result of the combined effects of the four Site areas. However, the topography and watercourse features within these areas are influenced by the intensive farming that has diminished the 'sense of place' in parts including the drainage of flood plains and impact on the riparian vegetation and other habitats. Where watercourses survive, their associated vegetation helps to curtail visibility in this area. Public access is also limited to these features. This aesthetic would not be changed. The difference in effect shows there are very minor patches of in-combination change but that would yield no discernible improvement or deterioration to the existing landscape character of the topography and watercourses.

7.16. Nationally and Locally Designated Landscapes:

- The landscape is shaped by the striking differences where there is a marked contrast between the locally designated Areas of Great Landscape Value (AGLV) being AGLV1- The Ridge, AGLV2 – Gainsborough and AGLV3 – Laughton Wood. With AGLV 1, the steep minor lanes that descend from the ridge-top route of the B1398 offer valuable views over the Till Vale from The Ridge.

7.17. Combined Effects of Four Site Areas [Landscape]

- There are no likely significant in-combination landscape effects.

Negative

7.18. Combined Effects of the Generating Substations [Visual]:

- With the Viewpoint Receptors (Doc. Ref. EN010133/APP/C6.3.8.3.2.3) there is potential for likely Significant visual effects at the construction stage, in combination with noise and dust effects. The construction activities would be short-lived but would be a dominant feature in the context of these viewpoints. Effects would be Moderate, Moderate-Major and Major and would be Adverse, but of a short-term duration.
- With the Residential Receptors, Appendix 8.3.3.2 [EN010133/APP/C6.3.8.3.2.3] shows that there is potential for likely Significant visual effects at the construction stage, in combination with noise and dust effects. These effects apply to Receptors R33, R36, R61, R62, R63A, R63B, R67 and R73. Effects would be Moderate-Major and would be Adverse, but of a short-term duration.
- With the Transport Receptors, Appendix 8.3.4.2 [EN010133/APP/C6.3.8.3.4.2] shows there is potential for likely Significant visual effects at the construction stage, in combination with noise and dust effects. These effects apply to Receptors T016, T019, T021, T040, T045, T072, T074, T099, T110, T119, T120, T122, T127 and T163. Effects would be Moderate and Moderate-Major and would be Adverse, but of a short-term duration.
- With the PRoW Receptors, Appendix 8.3.5.2 [EN010133/APP/C6.3.8.3.5.2] shows there is potential for likely Significant visual effects at the construction stage, in combination with noise and dust effects. These effects apply to Receptors Fill/86/1, Fill/767/1, Pilh/20/1, Stow/83/1 and TFLe/31/2. Effects would be Moderate-Major and would be Adverse, but of a short-term duration.

7.19. Combined Effects of Individual Assessment Topics – Cultural Heritage [Visual]:

- With the Viewpoint Receptors, Appendix 8.4.3 [C6.8.3.4.3] shows there is overlap with the Cultural Heritage Topic Area and there is potential likely Significant visual effects in combination with effects to cultural heritage receptors at the construction stage from Viewpoints VP06 and LCC-C-J. Effects would be Moderate-Major and Major and would be Adverse at both the construction and operation (year 1) stages and so the implications on landscape mitigation are taken into specific consideration at these viewpoints.

7.20. Combination of Different Works of the Scheme [Visual]

- With Viewpoint Receptors, Appendix 8.3.2.3 [EN010133/APP/C6.3.8.3.2.3] shows that there is potential for likely Significant visual effects at the construction stage and this is taken into account with other works comprising the Scheme. There are Viewpoints within the 2km Study Area of the substation Sites that are likely to experience some minor changes in the wider landscape at the construction stage as a result of construction traffic, minor noise and disturbance. The following viewpoints would be potentially affected at the construction and operation (Year 1) stages and experience views of the substation resulting in Moderate-Major and Major effects that would be Adverse.

Operational

Positive

7.21. Topography and Watercourses:

- During the Operation Stage (Year 15) the difference in effect for the combined effects of the four Sites would be Minor (Not Significant), since there would be some change to a landscape of medium sensitivity, affecting some key characteristics and the overall impression of its character, but with a Beneficial type of effect as a result of the proposed landscape mitigation measures.

Neutral

7.22. National Landscape Character Areas:

- These are not considered further within the LVIA Chapter as the assessment relies on the regional and local landscape character assessment as the baseline and to form judgements.

7.23. Regional Landscape Character Areas

- There are no likely significant in-combination landscape effects for the construction, operation (Year 1 and Year 15) and decommissioning stages of the Scheme.

Negative

7.24. Combined Effects of the Generating Substations [Landscape]:

- There are likely significant in-combination landscape effects at the construction and operation (Year 1) stages for the substation generating stations at Cottam 1, West A, Cottam 1 West B, Cottam 2, Cottam 3a and 3b substation Sites. These effects would be Adverse with a Moderate significance of effect.

Cumulative Impacts

7.25. The Applicant has assessed that the cumulative effects of the proposed solar farms within the vicinity of the Scheme, this includes Bumble Bee Farm, Field Farm, Gate Burton, High Marnham, Tillbridge and West Burton.

7.26. The Applicant does not consider that there are any negative impacts on a cumulative scale and there would be an overall

Positive

7.27. There would not be the removal of, or changes in individual topography or watercourse elements or features of the landscape as a result of the addition of the Scheme with the Cumulative Developments. However, the topography and watercourse features within these areas are influenced by the intensive farming that has diminished the ‘sense of place’ in parts including the drainage of flood plains and impact on the riparian vegetation and other habitats.

7.28. There would not be the removal of, or changes in individual Ancient Woodlands and Natural Designations features of the landscape as a result of the addition of the Scheme with the Cumulative Developments.

Neutral

7.29. There is potential for cumulative landscape effects on the landscape character within RLCT 3a Floodplain Valleys. The Floodplain Valleys extend into the area/areas identified for the Cable Route

Corridor (Cottam 1 to Cottam Power Station) and 0.5km from the outer boundary. The Floodplain Valleys mainly occur to the west of a group of settlements that extend from Gainsborough and include Lea, Knaith, Gate Burton, Marton, Brampton and Torksey. The difference in effect between the addition of the Scheme to the cumulative baseline is very low for the Cumulative Developments because there are very minor patches of cumulative change that would yield no discernible improvement or deterioration to the existing landscape character.

7.30. There is potential for cumulative landscape effects on the landscape character within RLCT 4a Unwooded Vales (East Midlands). The Unwooded Vales extend into the area/areas identified for the Cable Route Corridor (Cottam 1 to Cottam Power Station), the Cable Route Corridor (Cottam 1 to Cottam 2), the Cable Route Corridor (Cottam 2 to Cottam 3a and 3b) and the Cottam 1, Cottam 2 and Cottam 3a and 3b Sites. The difference in effect between the addition of the Scheme to the cumulative baseline is low for the Cumulative Developments during the construction and operation (Year 1) stages, because there are very minor patches of small cumulative change to a widespread area of medium sensitivity, affecting few characteristics without altering the overall impression of its character.

7.31. There is potential for cumulative landscape effects on the landscape character within RLCT 4b Wooded Vales (East Midlands). The Wooded Valles extend into the western section of the 2km Study Area and shares a boundary with the 'Built Up Area' that extends eastwards from Gainsborough towards Blyton following the main transport route of the A159 (Thonock Road). The difference in effect between the addition of the Scheme to the cumulative baseline is Very Low for the Cumulative Developments because there are very minor patches of cumulative change that would yield no discernible improvement or deterioration to the existing landscape character.

7.32. There would not be the removal of, or major and permanent changes in individual communications and infrastructure elements or features of the landscape as a result of the addition of the Scheme with the Cumulative Developments. However, the landscape is shaped by the wide range of local and strategic road networks, which make one landscape type or area different from another. The strategic major road network is defined by important historic routes and in contrast, the east west minor road network links several historic and distinctive smaller string of settlements across the area. Overall, the prevailing road network is formed by narrow lanes that are often tranquil and hedged to both sides with wide grassed verges, and this aesthetic would be changed, but the change to the fabric of the landscape and improvements to the landscape character of the local road network through the introduction of planting as landscape mitigation within the Sites will bring about improvements to overall landscape quality of the area. The difference in effect between the addition of the Cumulative Developments to the cumulative baseline of the Scheme is Very Low because there are very minor patches of cumulative change that would yield no discernible improvement or deterioration to the existing landscape character. The significance of effect would be Negligible (Not Significant) during the construction, operation (Year 1) and decommissioning stages. During the Operation Stage (Year 15) the difference in effect for the Cumulative Developments would be Minor (Not Significant), since there would be a small and limited change to a landscape of medium sensitivity, affecting some key characteristics and the overall impression of its character with a Neutral type of effect.

7.33. There would not be the removal of, or changes in, individual settlements, industry, commerce, and leisure elements or features of the landscape as a result of the addition of the Scheme with the Cumulative Developments. The nature of the predominantly rural and sparsely settled wider area with small villages and dispersed farms linked by quiet rural lanes, contrasting with the busy city of Lincoln and town of Gainsborough, is the main spatial function of the landscape. This spatial function is tempered by the villages that have a broad landscape setting and the sequence of views towards churches, which is an important feature along with the other long views across the landscape. The difference in effect between the addition of the Cumulative Developments to the cumulative baseline of the Scheme is very low because there are minor patches of small cumulative change to a limited area of medium sensitivity, affecting some characteristics without altering the overall impression of its character. The significance of effect would be Negligible (Not Significant) during the construction, operation (Year 1) and decommissioning stages of the Scheme. During the Operation Stage (Year 15), the difference in effect for the Cumulative Sites would be Minor (Not Significant), since there would be a small change to a landscape of medium sensitivity, affecting some key characteristics without altering the overall impression of its character with a Neutral type of effect.

7.34. There would not be the removal of, or changes in, individual Public Rights of Way features of the landscape as a result of the addition of the Scheme with the Cumulative Developments. The landscape is shaped by the network of footpaths and bridleways that offer a sequence of views to landmark churches, particularly along the B1241. Some views from the footpaths also offer westward views to the power stations on the Trent, and eastward views to the scarp face of Lincoln 'Cliff'. This sequence of views relies on the wider landscape setting of the minor roads that lead across this area as access for recreation. The PRoW network is often confined to the settlement edges where the woodland and tree cover closes down views of this broad landscape setting where the sequence of views is often lost due to tree cover. The views of the wider landscape are therefore mainly experienced from the road network, whereas appreciation of the landscape from the PRoW network is confined to select locations that are often around the edges of settlements. These relevant characteristics of the landscape have some ability to accommodate change with key beneficial effects and tertiary mitigation shows there is scope to bring forward improvements as part of the PRoW network. The difference in effect between the addition of the Cumulative Developments to the cumulative baseline of the Scheme is Low and Very Low because there are very minor patches of cumulative change that would yield no discernible improvement or deterioration to the existing landscape character. The significance of effect would be Low (Not Significant) during the construction and operation (Year 1) stages of the Scheme. During the Operation Stage (Year 15), the difference in effect for the Cumulative Developments would be Negligible (Not Significant), since there would be a noticeable change to a landscape of high and medium to high sensitivity, affecting some key characteristics, and the overall impression of its character with a Neutral type of effect.

7.35. There would not be the removal of, or changes in, individual Scheduled Monuments, Listed Buildings, Conservation Areas and Registered Parks and Gardens features of the landscape as a result of the addition of the Scheme with the Cumulative Developments. Overall, the landscape is shaped by the ancient enclosures and their contrast with the modern fields and planned enclosures that have a strong east to west orientation. The road network also reflects this pattern where Till Bridge Lane follows the course of a Roman road from Ermine Street on the top of the cliff to the former river crossing on the Trent. The wider landscape is typified by the central settlement line that broadly follows the 20m contour of the scarp and ridge. Gainsborough also includes a large deer park and its wooded setting to the north-east is a key feature. The ancient enclosures and deserted villages and their contrast with the modern fields and planned enclosures are also a key feature. The wider landscape is typified by the historic evidence of the Roman period, with the network of long straight roads, in particular Ermine Street which links Lincoln to the crossing point of the Humber. The spatial fabric of the landscape is also provided by the large-scale limestone plateau and its west facing scarp known as the 'Cliff', which features as a backdrop in many views across the area. The difference in effect between the addition of the Cumulative Developments to the cumulative baseline of the Scheme is Low and Very Low because a barely perceptible extent of landscape features and elements of importance to the baseline Scheduled Monuments, Listed Buildings, Conservation Areas and Registered Parks and Gardens would be affected. The significance of effect would be Negligible (Not Significant) during the construction and operation (Year 1) stages. During the Operation Stage (Year 15) the difference in effect for the Cumulative Developments would be Minor (Not Significant), since there would be a noticeable, but minor, change to a landscape of high and medium to high sensitivity, affecting some key characteristics and the overall impression of its character with a Neutral type of effect.

7.36. In summary, it has been assessed that there would be neutral impact on the following landscape receptors:

- Land use;
- Communications and Infrastructure;
- Settlements, Industry, Commerce and Leisure;
- Public Rights of Way and Access;
- Scheduled Monuments, Listed Buildings, Conservation Areas and Registered Parks and Gardens;

Requirements

Requirement 5 – Detailed design approval

7.37. This requirement stipulates the details that must be submitted to and approved by the Relevant Planning Authority before the authorised development may commence. The details submitted must be in accordance with the concept design parameters and principles (CDPP).

Requirement 7 – Landscape and ecological management plan

7.38. The LEMP will be substantially in accordance with the OLEMP.

7.39. The overall objective of the landscape design is to integrate the Scheme into its landscape setting and avoid or minimise adverse landscape and visual effects as far as practicable. Despite this claim, the Landscape and Visual chapter of the ES states the scheme would result in major and moderate impacts on the landscape.

Requirement 10 – Fencing and other means of enclosure

7.40. The undertaker is required to obtain the written approval from the relevant planning authority for any proposed temporary or permanent fences, walls or other means of enclosure, for each part in question. The written details of permanent fencing must be substantially in accordance with the relevant CDPP.

Requirement 13 – Construction environmental management plan

7.41. Under this requirement, no part of the authorised development may commence until a construction environmental management plan (which must substantially accord with the outline construction environmental management plan) has been submitted to and approved by the relevant planning authority. All construction works associated with the authorised development must be carried out in accordance with the approved construction environmental management plan.

7.42. The Outline Landscape and Ecological Management Plan (OLEMP) (Doc. Ref. EN010133/APP/C7.3) accompanies the Application and sets out the measures proposed to mitigate the potential impacts and effects on landscape (and ecological) features, and to enhance the landscape and biodiversity value of the Sites (i.e. the Green Infrastructure). The Landscape and Ecological Management Plan (LEMP), which takes into account and is prepared in accordance with the principles of the OLEMP, will be submitted to and approved by the relevant planning authority or authorities pursuant to a Requirement under the DCO.

Requirement 14 – Operational environmental management plan

7.43. Requirement 14 – Operational environmental management plan: Before the date of final commissioning of the authorised development, an operational environmental management plan (which must substantially accord with the outline operational environmental management plan) must be submitted to and approved by the relevant planning authority. The operational environmental management plan must be implemented as approved.

7.44. The OLEMP (Doc. Ref. EN010133/APP/C7.3) sets out the measures proposed to mitigate the potential impacts and effects on landscape (and biodiversity) features, and to enhance the landscape and biodiversity value of the Order limits (i.e. the Green Infrastructure). A detailed LEMP will be prepared in accordance with the principles of the OLEMP and will be submitted to and approved by the relevant planning authority or authorities. This will include measures to ensure landscape mitigation and enhancements are established and maintained into and throughout the operational phase. No visible lighting will be utilised at the Order limits perimeter.

Requirement 21 – Decommissioning and restoration

7.45. This requirement provides that within 12 months (or such longer period as agreed with the relevant planning authority) of the date the undertaker decides to decommission any part of the authorised development, the undertaker must submit to the relevant planning authority for its approval a decommissioning environmental management plan for that part which substantially accords with the decommissioning statement. No decommissioning works must be carried out until the relevant planning authority has approved the plan submitted in relation to such works. The plan submitted

must be implemented as approved. This requirement is without prejudice to any other consents or permissions which may be required to decommission any part of the authorised development.

8. Ecology and Biodiversity

Summary

8.1.1. The list below outlines the main points arising from the review of the Ecology and Biodiversity chapter of the Environmental Statement (Doc. Ref. EN010133/APP/C6.2.9) for the Cottam Solar Project.

- [EC1] The assessment does not appear to include any consideration of combustion emissions from on-site plant or transport to the site. If this has been scoped out, it would be helpful to state this explicitly.
- [EC2] Scoping Opinion, item ID 2.2.1 indicates that the applicant should include decommissioning of West Burton A in the ES cumulative assessment, but this does not seem to be included in Chapter 9 Section 9.9
- [EC3] Chapter 9 paragraph 9.7.82 (and Table 9.3) a beneficial effect significant at a district level for grassland is welcome. However, it is unclear whether the information provided in this chapter or APP/C7.3: Landscape and Ecological Management Plan: Outline Plan contains sufficient secured detail to support this conclusion at this stage. It is recommended that West Lindsay council should request further information to substantiate this claim as part of the written representation.
- [EC4] Chapter 9 para 9.9.19: 'However, there is the potential for increased temporary, but medium/long term fragmentation or disturbance effects on species like bats, badgers, hedgehogs, reptiles, amphibians and harvest mice which utilise field margins especially.' This sentence is unclear, more description is required as to whether a cumulative significant effect could result.
- [EC5] The Outline LEMP (APP/C7.3: Landscape and Ecological Management Plan: Outline Plan) contains a number of important measures that are relied on for the conclusions in Chapter 9. However, in places these measures lack confirmed detail. Further detail to confirm that these measures will be secured is required in order to fully support the conclusions in the Chapter.
- [EC6] Overall the conclusions as presented in App/C7.20 - Information to Support a Habitat Regulations Assessment: Cottam Solar Project (the 'ISHRA') seem reasonable. However, the report lacks the detail and does not appear to follow a systematic approach to assessment so there is a possibility that some effect pathways have been overlooked.
- [EC7] Pins Advice Note 10: Habitats Regulation Assessment relevant to nationally significant infrastructure projects contains a list of information that Applicants should provide. There are elements missing from the Habitat Regulations Report submitted as part of this Scheme.
- [EC8] ISHRA para 3.4.2 - In the Planning Inspectorate Scoping Opinion for this project, item ID 2.2.1 indicates that the applicant should include decommissioning of West Burton A in the ES cumulative assessment. It should also be included in the HRA in-combination assessment and considered in section 5.
- [EC9] ISHRA para 4.1.1 Is misleading in respect to Ramsar sites. There is the potential for the Ramsar Sites to have been overlooked by this assessment.
- [EC10] The Applicant's assessment is based primarily on the assumed knowledge of the other solar schemes in the West Lindsey District. Whilst it is understood that the Applicant may not have had access to the data of the other schemes when producing the ES, the Gate Burton and West Burton schemes are both in the examination process and therefore have published all their information.
- [EC11] The Applicant has based the Shared Cable Route Corridor on a construction programme taking 18 months in the Ecology and Biodiversity chapter. This differs from the Gate Burton scheme which accounts for a 24-36 month construction period. This would also circumvent the BNG guidelines which stipulate that 'temporary loss' of habitat is only when this cannot be restored (in full) to baseline condition within 2 years. If the cable route

were to take longer than this then it is expected that the BNG calculations should be revisited.

Policy Context

National Policy

8.2. Section 5.3 of NPS (EN-1) states that '*development should aim to avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives (…); where significant harm cannot be avoided, then appropriate compensation measures should be sought*'.

8.3. NPS (EN-1) notes (see paragraph 5.3.13) that due consideration should also be given to regional and local biodiversity and geological designations this is because these sites have a fundamental role to play in meeting overall national biodiversity targets; contributing to the quality of life and the well-being of the community; and in supporting research and education.

8.4. The draft NPS (EN-3) also highlight that solar farms have the potential to increase the biodiversity value of a site, especially if the land was previously intensively managed. In some instances, this can result in significant benefits and enhancements beyond Biodiversity Net Gain, which result in wider environmental gains which is encouraged.

Local Policy

8.5. The Central Lincolnshire Local Plan policies which are relevant to the scheme are set out below.

8.6. Policy S14: Renewable Energy states that proposals for ground based photovoltaics should be accompanied by evidence demonstrating how opportunities for delivering biodiversity net gain will be maximised in the scheme taking account of soil, natural features, existing habitats, and planting proposals accompanying the scheme to create new habitats linking into the nature recovery strategy.

8.7. Policy S59: Green and Blue Infrastructure Network sets out where new green infrastructure is proposed, the design and layout should take opportunities to deliver biodiversity net gain and support ecosystem services.

8.8. Policy S60: Protecting Biodiversity and Geodiversity requires development proposals will be considered in the context of the relevant Local Authority's duty to promote the protection and recovery of priority species and habitats. If the proposals do cause adverse impacts, then the benefit of the scheme will need to provide benefits the clearly outweigh the harms. Development will only be supported where the proposed measures for mitigation and/or compensation along with details of net gain are acceptable. All development will also need to meet the following tests:

- Protect, manage, enhance and extend the ecological network of habitats, species and sites of international, national and local importance.
- Minimise impacts on biodiversity and features of geodiversity value.
- Deliver measurable and proportionate net gains in biodiversity.
- Protect and enhance the aquatic environment within or adjoining the site, including water quality and habitat.

8.9. If the above tests cannot be met, development will be refused.

8.10. Policy S61: Biodiversity Opportunity and Delivering Measurable Net Gains requires development to deliver at least a 10% measurable biodiversity net gain attributable to the development. The net gain for biodiversity should be calculated using Natural England's Biodiversity Metric.

8.11. Policy S66: Trees, Woodland and Hedgerows requires proposals to provide evidence that they have been subject to adequate consideration of the impact of the development on any existing trees and woodland. New developments will also be expected to retain existing hedgerows where appropriate and integrate them fully into the design having regard to their management requirements.

Key Impacts

8.12. The following impacts assessed in Chapter 8: Ecology and Nature Conservation.

Construction

Positive

8.13. There are no positive impacts identified.

Neutral

8.14. The proposed development does not trigger any of Natural England's Impact Risk Zones for the SSSIs and, therefore, it is reasonable to assume that this is the case for the LWSs and LNR, in the absence of any formal risk zone given for them.

8.15. None of the habitats for which the species the designated sites are notified are present within Cottam 3a or 3b, such as heathland, woodland or acid grassland supporting woodlark and nightjar. The absence of strong habitat corridors between the designated sites and Cottam 3a or 3b also reduces the likelihood that any of the reptiles or invertebrate species listed under the designations would rely on or disperse onto/via the Scheme.

8.16. These reasons, in conjunction with the nature of the development, being self-contained and largely passive for its duration, means it is unlikely that any impacts on the designated sites will arise.

8.17. No direct loss of woodland is anticipated in relation to the array Site construction, as all access and construction activity will avoid the few woodland habitats which occur adjacent to them.

8.18. The potential for loss of hedgerows and trees to the construction of the array Sites is very limited as the design process has continuously sought to refine down the number of new crossings or gaps required in existing field boundaries. A totals 12 new hedgerow gaps, with 10 associated ditch crossings. These gaps will measure between 3-6.5m wide. In the context of the Scheme's hedgerow network which comprises approximately 65km within the Sites, such losses are proportionately extremely small.

Negative

8.19. These 12 designated sites are all located within 5km north of Cottam 3a and Cottam 3b and all are associated with an area of mostly post-WWII plantation woodland to the north and west of the village of Laughton. There is a low possibility of pollution events impacting the sites due to Cottam 3a lying partially within the Laughton Common SSSI surface water catchment. Sediments or contaminants may be discharged accidentally into watercourses during construction, for example. However, it is noted that the streams and ditches associated with Cottam 3a all drain into the Northorpe Beck and, thereafter, the River Eau, which are downstream of the watercourses within Laughton Common SSSI.

8.20. Coates Wetland LWS and Trent Port Wetland LWS are located close to the Shared Cable Corridor, where multiple cables from this and other proposed solar energy projects may be sited, there is the possibility that prolonged trench opening or reopening work (depending on the timing and opportunity for co-ordination of cable installation) may exacerbate any such indirect fragmentation, as well as the potential for indirect degradation through pollution events.

8.21. A total length of between approximately 180 and 420m of hedgerow may be affected by the cabling works.

8.22. Accidental damage or pollution events during construction could degrade the hedgerow and watercourse network and woodland edges leading to localised, temporary adverse reductions in habitat quality for foraging bats.

8.23. Many trees with bat roosting potential were recorded on Site within hedgerows. Any deliberate or accidental loss of trees capable of supporting roosting bats, could result in direct harm, population fragmentation and habitat degradation.

8.24. The effects of the installation of solar panels on bat activity and the activity of their prey is largely unknown, as highlighted by Natural England in their 2016 evidence review of the impact of solar farms on birds, bats and general ecology. However, a recent study into this concluded no significant differences in bat abundance between the centre and edges of fields containing solar arrays. Some concern has previously been raised that the presence of solar panels may have adverse impacts on bats when echolocating, for instance by confusing solar panels for waterbodies, from which bats both glean insects and drink.

8.25. Otters and water voles may be impacted through direct harm (to animals or their burrows) or disturbance during any construction activity affecting boundary habitats (ditches, watercourses and associated adjacent scrub, hedgerows or woodland). This is considered more likely where carried out in relation to rivers or significant watercourses and ditches, rather than smaller ditches. Cable installation works will also require the incursion into approximately 50 ditches which has the potential to cause direct harm to water voles and otters.

8.26. Impacts upon reptiles might comprise direct harm, habitat degradation and habitat loss during clearance of hedgerows or other field boundary habitats required for permanent/temporary construction and maintenance access or cable trenching. Where limited numbers of breaches for Site access are required, some minor habitat loss can be expected, although the distances involved (3-6.5m) are not considered to be a significant barrier to dispersal. During cable installation, habitat reinstatement will follow immediately after completion of trenching in each location, therefore impacts on connectivity are considered to be temporary and short-term.

8.27. There is the potential for accidental mortality to ground nesting birds during site clearance or preparation procedures at the onset of construction, for both the array and cable routes.

8.28. Nesting sites of all birds are capable of being harmed by certain habitat clearance activities, either to facilitate access onto the array Sites or cabling works. Accidental damage to nesting habitat, or degradation through pollution events would be avoided through the adoption of protective buffer zones from the onset of construction.

8.29. Minor losses of hedgerow habitat at the array sites are not considered to cause a cumulative impact on the birds which use them as losses are limited to 3-6.5m lengths and represent a fraction of the total hedgerow network available.

8.30. During construction works, if deep trenches are left open overnight or high voltage machinery is present, there may be potential for incidental injury or mortality to badgers exploring the site during the night.

8.31. Although none have been observed to date, invasive non-native species may be caused to spread through works associated with ditches and crossing thereof, or during any necessary works to clear habitats. Non-native plant species are considered most likely to occur at field boundaries and in habitats associated with watercourses.

Operational

Positive

8.32. Water quality can be expected to significantly increase post-development due to the anticipated reversion to permanent grassland under the array (reduced sediment run-off) and cessation of application of fertilisers and pesticides.

Neutral

8.33. Of the sites located within 5km north of Cottam 3a and Cottam 3b, it is considered unlikely that any impacts beyond the low possibility of contamination or sediment mobilization occurring.

8.34. Impacts on reptiles and amphibians during the operation of the Scheme are likely to be minimal, considering the adoption of ecological buffer zones and the restriction of development and vehicle movement to outside of these, save for habitat management operations.

8.35. Owing to the use of development free buffer zones from the onset of construction, it is considered unlikely that the habitats within which breeding birds nest will be degraded through the presence of the adjacent arrays.

8.36. Perimeter fencing is not considered to be a barrier to badger movement given their propensity for digging (the fencing will not be buried).

8.37. Should invasive species be present, operational phase impacts are considered unlikely due to the buffering of peripheral habitats included within the Scheme.

Negative

8.38. The loss of habitats remains a negative impact, however the provided mitigation and BNG are delivered and maintained, these impacts will be addressed.

Decommissioning

8.39. Activities relating to the removal of solar panel frames, underground cabling, substations and concrete footings, access and energy storage would be expected to have similar (or no worse) direct effects as those described in the construction phase impacts for each receptor Comparable levels of disturbance from movement of vehicles and personnel would be expected.

Positive

8.40. The restoration of the land back to open arable farmland would likely be beneficial for some species of farmland bird which require open sightlines, as well as for plant species associated with arable margins.

Neutral

8.41. Depending on the ecological value of the habitats that develop over the lifespan of the scheme, it is realistic that certain areas of the site may be retained due to their value for wildlife on decommissioning.

Negative

8.42. Much of the biodiversity value which it is anticipated will develop in the preceding (approximately) forty years would be lost along with habitat for a variety of other species. In order to revert back to arable food production, it may be necessary to enhance the nutrient content of the soil if it has been depleted, which would likely be achieved through treatment with fertilisers, although it is believed that this is highly unlikely and an increase in soil fertility is likely to arise.

8.43. An increase in the use of pesticides and herbicides would also be expected. The decision on the farming type to be used will be made by the landowner prior to decommissioning.

8.44. Based upon current (2022) legislative protection, protected species which could be directly impacted by decommissioning activities would include badgers, water vole, otter, great crested newts, reptiles (grass snake) and breeding birds. Further surveys to identify the use of the site by these receptors would therefore also be expected as a minimum.

Cumulative Impacts

8.45. Cumulative effects arising from the combined impacts of similar or large-scale development in proximity to the Scheme, this included: Gate Burton Energy Park; Tillbridge Solar; and the West Burton Solar Project. The cumulative assessment also looks at the Scheme's Cable Route Corridor and the cumulative effects from the possible sequential or simultaneous installation processes which may transpire in the event that two or three of these projects gain consent.

Positive

8.46. Effects from the Scheme on bats are likely to be neutral to moderately beneficial. Because of this, cumulative effects of these three projects with the Scheme are unlikely, although each project might cause its own adverse effects individually (unclear at this stage from review of available documents).

8.47. Given the moderate beneficial effects of the Scheme on reptiles and amphibians, and the likelihood that hedgerow habitats will be preserved within the three projects, no adverse cumulative impacts are anticipated. Depending on habitat retention, creation and management prescriptions to be implemented within them, a moderate cumulative beneficial effect potentially significant at a District level could occur.

Neutral

8.48. As most of the designated sites which were at risk of significant impacts from the Scheme were located substantially distant from the other three solar proposals, no cumulative impacts were considered likely to occur. Therefore, all neutral residual effects are likely to remain as such.

8.49. It is understood that the Gate Burton and West Burton solar proposals will retain and protect boundary habitats and all other habitats of ecological value. It is also assumed that attempts will be made to minimise the loss of hedgerow and incursions/culverting of ditches and watercourses wherever possible. The nature of solar schemes is to occupy field centres, and the pervasive land use in this area is arable/cereal farming. It is presumed that buffer zones protecting marginal

habitats will be instigated in all cases. Furthermore, as residual effects from the Scheme on valued habitats are neutral, it is considered unlikely that an elevation to an adverse effect would occur in combination with these projects.

8.50. When referring to otters and water vole, the Scheme and Gate Burton Energy Park are relatively unlinked, hydrologically, meaning dispersal by these species between it and the Scheme is less likely. The West Burton Solar Project shares a hydrological link via the River Till. It is unknown how linked Tillbridge Solar will be, but Cottam 2 is located relatively close by, As effects from the Scheme are neutral to minor beneficial, it is considered unlikely that cumulative effects on these species would occur, but this is provided that they will retain boundary features, including ditches and watercourses, and minimise direct impacts upon them as far as possible.

8.51. Given the neutral to minor beneficial effects of the Scheme on Polecat, Hedgehog, Brown Hare, and the likelihood that hedgerow habitats will be preserved within the three projects, no cumulative effects are anticipated.

8.52. Given the retention and protection of watercourses and marginal habitat with the Scheme, no adverse cumulative impacts are considered likely on invertebrate and freshwater fish. There is the potential for a cumulative beneficial effect from the projects, should they also focus on the creation of a range of diverse grassland habitats within and outside of panelled areas.

8.53. As no invasive species were recorded within the Scheme, no cumulative effects are considered likely.

8.54. Several designated sites were located close to the Shared Cable Route Corridor, particularly Coates Wetland LWS, Trent Port Wetland LWS (which occur close to the proposed River Trent crossing point) and Cow Pasture Lane Drains LWS. It is proposed that these sites are protected through the use of Horizontal Directional Drilling. In which case, a simultaneous or sequential cable installation programme should not cause any cumulative impacts.

8.55. An 18 month cable works programme for the simultaneous installation option would enable habitats removed/disturbed by the works to be reinstated in reasonable time, as assessed above in this Chapter. None of the habitats recorded within the field surveys were of such value as to mean they could not withstand some temporary loss from a working width, or that wider effects would be caused.

Negative

8.56. As the three projects are highly likely to replace the arable habitats with grassland, there is the potential for a cumulative impact on harvest mice which typically rely on tall, tussocky grassland as well as arable crops. Depending on the degree of marginal habitat retention and tussocky grassland creation, a minor cumulative adverse effect operating at a Local or District scale may be caused.

8.57. Ground nesting birds are likely to be affected through displacement by each of the proposed projects given the incompatibility of solar hardware with the necessary long, unbroken sightlines required by these species for predator avoidance when nesting. The degree of adverse impact depends on the level of mitigation each Scheme is able to provide. It is understood that the West Burton Solar Project is to provide in the region of 100ha of land suitable for ground nesting birds within its Order Limits which will significantly reduce adverse impacts. At this point, it is not known what mitigation will be provided for ground nesting birds at the other two projects. Consequently, it is likely that a moderate cumulative adverse effect on skylark at potentially a District level may occur. Similar effects on yellow wagtail, grey partridge and quail may also occur.

8.58. As flocks of many overwintering bird species rely on open habitats when foraging, it is unlikely that impacts on these species will be neutral or beneficial at the three projects, provided that these species occur at them. Consequently, given their proximity to the Scheme, a cumulative adverse effect at Local scale is possible.

8.59. A sequential programme over five years would be expected to give rise to a cumulative adverse effect, considering the need for the compounds, jointing bays, haul routes etc to remain in place for five years. Although, the trenching works could be completed and remediated as a priority given that cable pulling could be carried out at any time once the ducts are installed. This would minimise the number of hedgerow incursions which would need to remain in place, limiting them to haul route gaps only. Consequently, the sequential programme would have greatest impact on hedgerow habitat, followed by grasslands including semi-improved grassland and lowland floodplain grassland.

Requirements

Requirement 7 - Landscape and Ecological Management Plan

8.60. This requirement stipulates that no part of the authorised development may commence until a written landscape and ecological mitigation plan (substantially in accordance with the outline landscape and ecological mitigation plan) has been submitted to and approved by the relevant planning authority. The landscape and ecological mitigation plan must be implemented as approved.

Requirement 8 – Ecological protection and mitigation strategy

8.61. This requirement stipulates that no part of the authorised development may commence until a written ecological protection and mitigation strategy (substantially in accordance with the outline ecological protection and mitigation strategy) has been submitted to and approved by the relevant planning authority. The ecological protection and mitigation strategy must be implemented as approved.

Requirement 9 – Biodiversity Net Gain

8.62. This requirement stipulates that no part of the authorised development may commence until a biodiversity net gain strategy has been submitted to and approved by the relevant planning authority, in consultation with the relevant statutory nature conservation body.

Requirement 13 – Construction environmental management plan

8.63. Under this requirement, no part of the authorised development may commence until a construction environmental management plan (which must substantially accord with the outline construction environmental management plan) has been submitted to and approved by the relevant planning authority. All construction works associated with the authorised development must be carried out in accordance with the approved construction environmental management plan.

8.64. A pre-construction site walkover will be undertaken in advance of mobilisation/any potential advance works to reconfirm the ecological baseline conditions and to identify any new ecological risks.

8.65. Updated species surveys would be completed as appropriate to reconfirm the status of protected species identified, to inform mitigation requirements and support protected species licence applications, if required by the council(s) and EcoCoW.

Requirement 14 – Operational environmental management plan

8.66. Requirement 14 – Operational environmental management plan: Before the date of final commissioning of the authorised development, an operational environmental management plan (which must substantially accord with the outline operational environmental management plan) must be submitted to and approved by the relevant planning authority. The operational environmental management plan must be implemented as approved.

8.67. The OLEMP (Doc. Ref. EN010133/APP/C7.3) will be used to manage the areas of landscaping to maximise the benefits for biodiversity and the monitoring requirements to ensure the successful establishment of the proposed planting.

Requirement 21 – Decommissioning and restoration

8.68. This requirement provides that within 12 months (or such longer period as agreed with the relevant planning authority) of the date the undertaker decides to decommission any part of the authorised development, the undertaker must submit to the relevant planning authority for its approval a decommissioning environmental management plan for that part which substantially accords with the decommissioning statement. No decommissioning works must be carried out until the relevant planning authority has approved the plan submitted in relation to such works. The plan submitted must be implemented as approved. This requirement is without prejudice to any other consents or permissions which may be required to decommission any part of the authorised development.

8.69. Standard management measures will be implemented to prevent pollution incidents, minimise effects on ecology from noise and vibration, prevent and minimise dust creation and air pollution. Precautionary working method statements would be produced, controlled, monitored, and implemented.

9. Socio Economics, Tourism and Recreation

Summary

9.1. The list below outlines the main points arising from the review of the Socio Economics, Tourism and Recreation chapter of the Environmental Statement (Doc. Ref. EN010133APP/C6.2.18) for the Cottam Solar Project:

- [SETR1] It is recognised that there are some financial benefits as a result of the Scheme. When considering that there are potentially four solar schemes located within West Lindsey it is questioned how the Scheme will identify the required workforce given the level of resource needed to deliver all the schemes at the same time.
- [SETR2] The analysis of serviced accommodation units shows that accommodating the anticipated temporary employee requirement would lead to an oversubscription of rooms for approximately 4 months of the anticipated 24-month construction period. The maximum rate of oversubscription during these months is 2.7% if normal occupancy of rooms for business and tourism are retained. This therefore shows that there is insufficient accommodation space within the Local Impact Area for the construction peak months. This event would occur just for the construction of Cottam. Therefore on a cumulative level, the accommodation for temporary employees would lead to further oversubscription of rooms if the schemes were to be constructed at the same time. On a cumulative level, it is
- [SETR3] The Applicant recognises that during the operational the Scheme will have a long-term impact on the landscape character of some tourism and recreation receptors that are reliant on the landscape context for their value, such as viewpoints, landmarks, and cultural heritage assets. Thus, the maximum long-term moderate-minor adverse effect on the desirability of local tourist attractions and recreation centres in the Local Impact Area could lead to a proportional maximum long-term moderate-minor adverse effect on the local tourism industry and economy. Should the other solar schemes in the area be consented, it is considered that this impact will be amplified as large areas of West Lindsey will be characterised by solar farms.
- [SETR4] The Applicant recognises that there will be a long-term impact on tourism as a result of the Scheme during the construction phase. There is a potential for the Scheme to reduce the desirability of the Local Impact Area for tourism, and as such, an estimated worst-case scenario of a 1% drop in visitor spending per annum is assessed herein. It is therefore questioned that once the operation period has started and noting the applicants recognition that there will be a that the impact on a long-term impact on the landscape character whether it has been assessed about the loss in long-term loss for the tourism economy.
- [SETR5] The Scheme will result in the loss of approximately 17 agricultural sector jobs in the Local Impact Area. It is claimed that these jobs will return following the decommissioning of the Scheme; however, following a 40 year gap in employment it is difficult to determine whether these jobs will realistically return.

Policy Context

National Policy

9.2. Paragraph 5.12.6 of the NPS [EN-1] states that the ExA '*should have regard to the potential socio-economic impacts of new energy infrastructure identified by the applicant and from any other sources that the IPC considers to be both relevant and important to its decision*'.

9.3. The NPS goes on to say the ExA '*should consider whether mitigation measures are necessary to mitigate any adverse socio-economic impacts of the development'*.

9.4. The NPPF states that decisions should enable sustainable rural tourism and leisure developments which respect the character of the countryside.

9.5. Moreover, decision should enable and support healthy lifestyles, especially where this would address identified local health and well-being needs – for example through the provision of safe and accessible green infrastructure.

Local Policy

9.6. The Central Lincolnshire Local Plan policies which are relevant to the scheme are set out below.

9.7. Policy S10: Supporting a Circular Economy recognises the high energy and material use consumed on a daily basis, and, consequently, is fully supportive of the principles of a circular economy. As such, proposals will be supported, in principle, which demonstrate their compatibility with, or the furthering of, a strong circular economy in the local area.

9.8. Policy S20: Resilient and Adaptable Design requires design proposals to be adaptable to future social, economic, technological and environmental requirements in order to make buildings both fit for purpose in the long term and to minimise future resource consumption. The relevant tests to this Scheme must be met for proposals to be deemed acceptable:

- Allow for future adaptation.
- Be resilient to flood risk, from all forms of flooding.

9.9. Policy S28: Spatial Strategy for Employment requires employment related proposals to be consistent with meeting the following overall spatial strategy for employment. The strategy is to strengthen the Central Lincolnshire economy offering a wide range of employment opportunities focused mainly in and around the Lincoln urban area and the towns of Gainsborough and Sleaford, with proportionate employment provision further down the Settlement Hierarchy (see Policy S1).

9.10. Policy S45: Strategic Infrastructure Requirements states that development proposals will only be granted if it can be demonstrated that there is, or will be, sufficient infrastructure capacity to support and meet all the necessary requirements arising from the proposed development.

9.11. Policy S54 notifies applicants that the potential for achieving positive mental and physical health outcomes will be taken into account for all schemes. Where any potential adverse health impacts are identified, the applicant will be expected to demonstrate how these will be addressed and mitigated.

Key Impacts

Construction

Positive

9.12. The anticipated inbound number of construction workers (average 125 FTE employees, with a peak month of 282 FTE employees, based on the modelled construction programme used for the purpose of this socio-economic assessment) has the potential to increase accommodation occupancy rates by 13.0% over the 24- month construction period. A 13.0% increase in the 425-strong accommodation employment sector to meet this increased need would equate to an additional 55 FTE employees per annum over the construction period. This would amount to a high positive impact in the Local Impact Area.

9.13. The potential for construction employees increasing the occupation rate of accommodation units throughout the construction period would have a high positive impact directly on the accommodation sector, thus having a direct medium-term temporary major-moderate beneficial effect.

9.14. The construction economy in the Local Impact Area is worth approximately £258 million, and as such, the net uplift in GVA of £12.2 million represents a potential increase of 4.7% in the local construction economy. In the Regional Impact Area, the magnitude of impact (of £16.9 million GVA to an economy worth approximately £7.0 billion) is low, and as such is a medium-term temporary minor beneficial effect.

9.15. The use of temporary accommodation for inbound temporary construction workers from outside the Local Impact Area could lead to a 12.9% increase in accommodation employment. This is likely to induce a GVA uplift to the accommodation sector economy of £1.7 million, based on a GVA per worker of £31,028 (Ref 18.60). This represents a 3.1% increase in the local accommodation and

food services economy (worth £55 million), and as such, is a medium magnitude impact to a low sensitivity receptor, resulting in a medium-term temporary moderate-minor beneficial effect. The impact within the Regional Impact Area, with an accommodation and food services economy worth £1.8 billion) (Ref 18.60), is a negligible (0.09%) impact to a low sensitivity receptor and is therefore a short-term temporary negligible beneficial effect.

Neutral

9.16. The consequential estimated labour requirement for the Scheme over the projected 24-month construction period is therefore equivalent to a gross 467 full time equivalent (FTE) employees per annum, with the estimated on-site construction workforce expected to peak at approximately 788 employees at month 14 of the construction period.

9.17. The construction workforce is to consist of a mix of employees from within and outside the Local Impact Area. There may be need for specialist employment to be sourced from outside the Local Impact Area where particular skillsets cannot be sourced locally. The temporary employment generated by the Scheme's construction is equivalent to approximately 972 FTE jobs per annum. Of these, 624 are anticipated to be taken up by the workforce within the Local Impact Area, a total of 812 are anticipated within the Regional Impact Area (inclusive of the LIA), and the other 160 jobs are expected to be taken up by workers from elsewhere in the UK.

9.18. The level of accommodation needed for temporary construction workers is likely to exceed accommodation stock in the peak construction months, thus displacing a proportion of the usual number of visitors using accommodation in the Local impact Area. As the visitor population is being displaced by construction workers also seeking temporary accommodation, the effect is neutral. This is applicable at both the Local and Regional Impact Area levels.

9.19. The anticipated uplift in population is anticipated to be negligible in magnitude, at both level of the Local and Regional Impact Areas. Any changes to the demographic profile of either the Local or Regional Impact Area are expected to be extremely low and unlikely to have either a predominantly positive or negative bias. Therefore there is anticipated to be a neutral effect overall with regard to resident age demographics.

Negative

9.20. The Scheme does have the potential to negatively impact on some local employment sectors: specifically the agricultural, and tourism and recreation industries. It is projected to impact on up to 1,451 hectares of agricultural land for the operational lifetime of the Scheme, this will therefore cause approximately 17 FTE agricultural sector jobs to be lost. This impacts approximately 0.4% of the agricultural sector employment, and as such is a low magnitude impact. Due to its medium sensitivity this results in a long-term moderate-minor adverse effect to the Local Impact Area. In the Regional Impact Area, this is a 0.04% reduction in agricultural employment, representing a negligible change to a receptor of low sensitivity. Therefore, the effect is long-term negligible adverse.

9.21. As a secondary impact of the uplift in the construction employment in the Local Impact Area, there is potential for the accommodation industry to be impacted by the need for inbound temporary construction workers to be accommodated within the Local Impact Area. The impacts on the availability of accommodation for tourism and recreation as a result of a loss of available accommodation space has potential to have a short-term peak of medium magnitude. However, this is to be mitigated to reduce the impacts to a medium-term low magnitude over the course of the construction period. Resultantly, the impact on accommodation for visitors is a medium-term temporary moderate-minor adverse effect.

9.22. The analysis of serviced accommodation units shows that accommodating the anticipated temporary employee requirement would lead to an oversubscription of rooms for approximately 4 months of the anticipated 24-month construction period. The maximum rate of oversubscription during these months is 2.7% if normal occupancy of rooms for business and tourism are retained. This therefore shows that there is insufficient accommodation space within the Local Impact Area for the construction peak months. Thus, as set out in the embedded mitigation measures in Section 18.6 of the Socio-Economics and Tourism and Recreation chapter of the ES, this would require employees to be accommodated elsewhere, such as in private rental, or alternatively would displace up to a maximum of 2.7% of the predicted business and tourism occupants from

accommodation spaces. Furthermore, the construction timescale has an embedded level of flexibility, and thus the peak need could be moved to months of greater usual capacity.

9.23. The anticipated increase in construction workers in the Local Impact Area is likely to create increased demand for accommodation, and will therefore have a potential impact on temporary and permanent accommodation stock within the Local Impact Area including hotel rooms, temporary accommodation, and rented and market properties. Effects at the regional level have not been assessed as the anticipated need for accommodation is considered to be exclusive to the Local Impact Area for assessing the worst-case scenario resulting from the Scheme's construction.

9.24. Should the temporary employees from outside the Local Impact Area require accommodation in temporary accommodation units, the anticipated peak monthly requirement will be 282 units, in the context of a known temporary accommodation stock of 1,419 units within the Local Impact Area. As identified previously, the accommodation sector in the Local Impact Area is of a medium sensitivity to change due to its small size, particularly in relation to the Regional Impact Area or national trends. The potential for construction employees increasing the occupation rate of accommodation units throughout the construction period would have a high positive impact directly on the accommodation sector, thus having a direct medium-term temporary major-moderate beneficial effect. This therefore would be a significant effect. However, the impacts on the availability of accommodation for tourism and recreation as a result of a loss of available accommodation space has potential to have a short-term peak of medium magnitude. However, this is to be mitigated to reduce the impacts to a medium-term low magnitude over the course of the construction period. Resultantly, the impact on accommodation for visitors is a medium-term temporary moderate-minor adverse effect.

9.25. The projected of lost spending in the tourism economy would be an equivalent loss of 1 FTE worker in the RSTU grouped sector industry (based on an average £44,841 GVA per worker per annum). This impacts approximately 0.04% of the 3,500-strong RSTU sector employment in the Local Impact Area, and as such is a negligible magnitude impact to a low sensitivity receptor, resulting in a short-term temporary negligible adverse effect. The magnitude of impact is smaller at the regional level (0.002% reduction to 93,000 employees), and therefore results in a short-term temporary negligible adverse effect.

9.26. The projected uplift of 0.06% to the residential population in the Local Impact Area represents a medium-term temporary negligible magnitude impact with regard to the number of people requiring access to local services including primary health services. This could therefore have secondary impacts on other types of health and wellbeing receptors in the population of the Local and Regional Impact Areas as a result of reduced accessibility to local healthcare services. As rates of disability and long-term physical health conditions in the Local Impact Area are more in keeping with national trends than for other health indicators, the sensitivity is low, and thus the negligible scale impact would result in a medium-term temporary negligible adverse effect. This would be the same in the Regional Impact Area.

9.27. There is an assessed negligible impact on public transport services. Baseline conditions demonstrate that compared to regional and national rates the Local Impact Area has a substantially greater rate of driving to work and lower rate of use of public transport. As a result, working commuting patterns in the Local Impact Area are of a medium sensitivity to change. Resultantly, at worst, the impact on existing commuters is a medium-term minor adverse effect. Impacts at the regional level are not assessed due to the localised nature of transport impacts from the Scheme.

9.28. The secondary impacts of the Scheme could lead to a loss of £60,000 to the tourism economy as a result of reduced visitor spending. This is equivalent to a loss of 1.4 FTE workers based on a GVA per worker of £44,841 (Ref 18.60). Most of this economic loss will be felt in the local arts, entertainment, and recreation sector, which is of a low sensitivity to change. As such, a £60,000 loss to this economic sector (worth £76 million) represents a loss of 0.08% which therefore constitutes a negligible magnitude impact, resulting in a medium-term temporary negligible adverse effect. This loss to the arts, entertainment, and recreation sector in the Regional Impact Area, worth £2.9 billion, is a loss of 0.002% which is a medium-term temporary negligible adverse effect.

9.29. Although some of the identified tourism and recreation effects are significant, the number of identified landscape and heritage tourism receptors that are likely to be adversely effected by the Scheme's construction are likely to have a low overall impact on the desirability of the Local Impact Area for tourists and visitors. Resultantly, the effect on local tourism attractions in the Local Impact Area is minor adverse.

9.30. The Scheme's construction is likely to have direct impacts on a number of Public Rights of Way and long-distance recreation routes as a result of temporary use as construction accesses, any required diversions and closures, and secondary temporary impacts as a result of the movements of construction goods and employee traffic. As a result of the embedded mitigation measures the greatest effects on the use, accessibility, and desirability of either Public Rights of Way or of long-distance recreation routes are moderate-minor adverse effects. These measures include the use of traffic management to ensure conflicts between the use of recreational routes are not adversely impacted by the routing of construction traffic, and limiting the need for diversion or closure of public rights of way. Where necessary for cable laying, public right of way closures will be limited to overnight working to limit the impacts of closures.

9.31. There are up to moderate-minor adverse effects on pedestrian and cycling traffic as a result of fear and intimidation from construction vehicle movements. Whilst all of these routes are highways, they are important as links connecting the PRoW network to nearby settlements and are therefore important to be considered as part of the assessment of effects on recreational routes.

Operational

Positive

9.32. Much of the operation and maintenance employment will sit within the energy sector. As such, the net direct employment uplift of 7 workers in the context of approximately 410 sector workers in the Local Impact Area represents a 1.7% increase from 2020 levels. This therefore represents a long-term medium positive impact to an industry that has a low sensitivity in the Local Impact Area.

9.33. The agriculture, mining, electricity, gas, water and waste (ABDE) grouped sector economy in the Local Impact Area is worth approximately £265 million, and as such, the net uplift in GVA per annum of £400,000 represents a potential increase of 0.1% in the local ABDE grouped sector economy. This will therefore have a long-term low positive impact on a low sensitivity receptor, thus resulting in a long term minor beneficial effect. At the regional level, the magnitude of impact (of £600,000 GVA per annum to an economy worth approximately £5.6 billion) is negligible.

Negative

9.34. As identified in the likely effects from the Scheme's construction, there are approximately 17 agricultural sector jobs that will remain lost during the Scheme's operational lifetime. As a result, this will have a long-term moderate-minor adverse effect in the Local Impact Area, and a long-term negligible adverse effect in the Regional Impact Area.

9.35. As the Scheme is estimated to displace approximately 17 agricultural sector jobs in the Local Impact Area, this is estimated to have an economic impact of £800,000 per annum, based on an annual GVA per worker of £49,074. This impact will reduce the value of the local agricultural economy by approximately 0.3%, and as such is a low magnitude impact, resulting in a long-term minor adverse effect. At the regional level, this is a negligible adverse effect. This notwithstanding, the Scheme is likely to bring a direct benefit to local landowners through payment of annual ground rent. This is anticipated to be in the region of £2.4 million per annum.

9.36. Whilst the operation of the Scheme is not anticipated to have a direct impact on the serviced accommodation in contrast to the construction phase, there is a potential for the Scheme to reduce the desirability of the Local Impact Area for tourism, and as such, an estimated worst-case scenario of a 1% drop in visitor spending per annum is assessed herein. This 1% fall in visitor spending per annum is approximately £240,000 (equivalent to the loss of 5 workers). Most of this economic loss will be felt in the local arts, entertainment, and recreation (RSTU) grouped economic sector. As such, a £240,000 loss to this economic sector (worth £76 million) represents a loss of 0.3%, which therefore constitutes a low magnitude impact, resulting in a long-term minor adverse effect. At the regional level, the loss to the arts, entertainment, and recreation sector is equivalent to 0.008% of the regional economic sector value. Therefore, the effect the Regional Impact Area is a long-term negligible adverse effect.

9.37. The development of the Scheme will have a long-term impact on the landscape character of some tourism and recreation receptors that are reliant on the landscape context for their value, such as viewpoints, landmarks, and cultural heritage assets. This could therefore have a secondary impact on local business that are reliant on tourism. Thus, the maximum long-term moderate-minor adverse effect on the desirability of local tourist attractions and recreation centres in the Local

Impact Area could lead to a proportional maximum long-term moderate-minor adverse effect on the local tourism industry and economy during the Scheme's operational lifetime.

Decommissioning

Positive

9.38. The net direct employment from the Scheme decommissioning is likely to most benefit the construction employment sector. The net uplift of 180 workers is a 3.8% increase to construction employment in the Local Impact Area. This is a medium magnitude impact to a low sensitivity receptor, resulting in a medium-term temporary moderate-minor beneficial effect. The total net direct uplift of 234 workers is a 0.2% increase to construction employment in the Regional Impact Area. This is a low magnitude impact to a low sensitivity receptor, resulting in a medium term temporary minor beneficial effect.

Neutral

9.39. Following completion of the decommissioning phase, employment will return to near baseline levels. This will therefore represent a permanent minor beneficial effect to the Local Impact Area, and a permanent negligible adverse effect to the Regional Impact Area.

Negative

9.40. The baseline socio-demographic conditions used for assessing the construction phase in 2024-2026 are unlikely to be representative of the population in 2066 at the assessed time of decommissioning. The uplift in population associated with the decommissioning of the Scheme is likely to affect some socio-demographic receptors such as access to local services including primary health services, access to accommodation, access to employment and education, and health and wellbeing. Any effects on the socio-demographic environment of the Local Impact Area are unable to be representatively assessed. However, if the assessment of the construction phase effects is taken as a worst-case, the impacts on the sociodemographic environment can be estimated as have up to a medium-term temporary moderate-minor adverse effect in the Local Impact Area, and up to a medium-term temporary negligible adverse effect in the Regional Impact Area.

Cumulative

9.41. The Scheme is located in an area where a number of Nationally Significant Infrastructure Projects (NSIP) are proposed, that may be developed in a similar timeframe. Thus there is the potential for cumulative effects on the local and regional socio-economic, tourism and recreation environment both during the development of these identified NSIPs, and their operational lifetimes. There are also a smaller number of other planning applications which have been considered for the same reasons, due to their scale and proximity to the Scheme.

9.42. The key NSIPs include the three solar schemes: Gate Burton, Tillbridge and West Burton Schemes. The assessment has also include the West Burton C gas-fired power station and several larger planning applications.

Construction

Positive

9.43. The anticipated uplift in need for temporary accommodation for inbound construction workers is likely to generate a peak of £6.0 million GVA in the year 2026 to the accommodation and services sector economy. This represents a 11.0% increase in the Local Impact Area, thus resulting in a peak cumulative medium-term temporary moderate beneficial effect. This is therefore a significant effect. Within the Regional Impact Area, this anticipated uplift represents a 0.3% increase. This therefore represents a is a peak cumulative medium-term temporary minor beneficial effect.

9.44. Accounting for "leakage" of commuters from outside the Local Impact Area, and existing employment displacement, the peak net uplift in construction employment in the Local Impact Area is 838 FTE employees in 2026. This represents an increase of 17.7% in construction employment which is of high magnitude. This is therefore a peak cumulative medium-term temporary moderate beneficial effect and is therefore a significant effect. In the Regional Impact Area, the magnitude of

impact (1,090 workers in a pool of approximately 100,000) is medium (+1.1%), and as such is a peak cumulative medium-term temporary moderate-minor beneficial effect.

Negative

9.45. The peak level of accommodation needed for temporary construction workers is likely to exceed accommodation stock, thus displacing a notable proportion of the usual number of visitors using accommodation in the Local impact Area. This could therefore lead to a peak cumulative medium-term temporary minor adverse effect to the accommodation sector in the Local Impact Area and a peak cumulative medium-term temporary negligible adverse effect in the Regional Impact Area.

9.46. The greatest level of economic impact to tourism and recreation, most likely to be felt in the arts, entertainment, and recreation grouped sector, is estimated to occur in 2023. The peak economic effect is estimated to be a loss of £110,000. This amounts to a 0.1% reduction in the economic sector, thus constituting a peak cumulative medium-term temporary minor adverse effect. The level of significance of effect in the Regional Impact Area is not anticipated to change.

9.47. Of the Public Rights of Way and long-distance recreation routes assessed, the Trent Valley Way is likely to see the greatest level of cumulative impact. These cumulative impacts are as a result of direct impacts from cable routes crossing the Trent Valley Way, and visual impacts from the multiple projects nearby or adjacent to the two variant routes of the Trent Valley Way. In a worst-case scenario, construction of the cable routes of the identified projects may run sequentially over a five-year period, requiring the Trent Valley Way to be closed three times during this. As such, the Trent Valley Way could experience a peak cumulative short to medium-term temporary moderate adverse effect. This is therefore a significant effect. Where feasible, the Applicant would look to work with other developers to seek to ensure that relevant the impacts to affected Public Rights of Way and long-distance recreation routes are mitigated and kept to a minimum.

Operation

Positive

9.48. The cumulative uplift in local housing requirement of 43 FTE employees could be accommodated in the current 730 dwelling per annum housing stock surplus in the Local Impact Area. The resultant uplift in housing need would fill 5.9% of the surplus, thus generating a cumulative long-term moderate-minor beneficial effect (in EIA terms) to housing accommodation in the Local Impact Area.

Negative

9.49. The cumulative operation phase of the projects is anticipated to generate a net loss of 62 FTE jobs per annum in the energy sector, accounting for leakage and displacement factors and the 125 energy sector jobs lost as a result of the closure of West Burton A. This represents a decrease of 15.1% in energy employment in the Local Impact Area. Resultantly, this is a cumulative long-term moderate adverse effect. This therefore is a significant effect. At the regional level, the magnitude of impact (a loss of 62 FTE employees per annum in a pool of approximately 8,000) is low (0.8%), and as such is a cumulative long-term minor adverse effect.

9.50. The net decrease in energy employment is likely to generate a cumulative GVA loss of £3.0 million per annum. This represents a loss of 1.1% to the agriculture, mining, electricity, gas, water and waste (ABDE) grouped sector economy, which is of low magnitude. This is therefore a cumulative long-term moderate-minor adverse effect in the Local Impact Area. In the Regional Impact Area, this loss of GVA to the ABDE grouped sector economy is equivalent to 0.05%, and therefore is of the same level of significance as when the Scheme is assessed in isolation.

9.51. The cumulative construction phase impacts from the assessed projects are very likely to have a somewhat increased level of effect on tourism and recreation in the immediate locality and Local Impact Area. These include the impacts to the economy already explored, as well as the further economic impacts as a result of cumulative landscape and traffic impacts. The resultant changes are therefore likely to affect the desirability and accessibility of tourism and recreation routes, attractions, and facilities.

9.52. The uplifts in population will however impact upon the number of people requiring access to local services including primary health services. As such, the Local Impact Area is anticipated to experience a cumulative long-term minor adverse effect, and the Regional Impact Area is

anticipated to experience a cumulative long-term negligible adverse effect on access to primary healthcare. This is likely to lead to have secondary cumulative effects of the same respective levels of significance on general population health and wellbeing. Furthermore, these effects are anticipated to lead to cumulative long-term negligible adverse effects to both the Local and Regional Impact Areas with regard to impacts on disability and long-term physical health conditions.

Requirements

Requirement 4 – Community liaison group

9.53. This requirement provides that the undertaker must establish a community liaison group prior to commencement of the authorised development, in order to facilitate liaison between representatives of people living in the vicinity of the Order limits, and other relevant organisations in relation to the construction of the authorised development.

9.54. This would be welcomed by WLDC in order to maintain communication with representatives of local people living within the locality of the Scheme.

Requirement 20 – Skills, supply chain and employment

9.55. The requirement stipulates that no part of the authorised development may commence until a skills, supply chain and employment plan (which must be substantially in accordance with the outline skills, supply chain and employment plan) in relation to that part has been submitted to and approved by the relevant planning authority. The skills and employment plan must identify opportunities for individuals and businesses to access employment and supply chain opportunities associated with the construction, operation and maintenance of the authorised development, and the means for publicising such opportunities. The skills and employment plan must be implemented as approved.

10. Transport and Access

Summary

10.1. The list below outlines the main points arising from the review of the Transport and Access chapter of the Environmental Statement for the Cottam Solar Project (Doc. Ref. EN010133/APP/C6.2.14).

- [TA1] The traffic survey data used to derive the baseline is from 2017 and 2019, which is before the Covid-19 pandemic restrictions. Nonetheless, this traffic data is now quite historic, with some of the data being more than five years old. Therefore, more recent traffic surveys should be considered to verify that the derived baseline traffic flows are representative of current day conditions.
- [TA2] It is unclear if the potential environmental effects due to any temporary highway works necessary to accommodate access by large construction vehicles and abnormal loads, that may require the removal of hedgerows for example, have been covered by the ES.
- [TA3] It is noted that deliveries will peak hours where possible; however, no reasons are provided as to why this might not be possible.
- [TA4] There are 16 separate construction traffic access points for the solar farm elements of the Scheme, with 13 access points for Cottam 1 alone. Moreover, there are 32 access points of the cable route access, with 12 access points required for the cable route between Cottam 1 and Cottam 2. Collectively the Scheme is proposing 48 access points. This would mean that there would be construction traffic along the route and using the local road network. It is questioned by so many accesses are needed and highlights the issue around the use of a 'network of sites'.
- [TA5] It is noted that there will be 'a small number of abnormal load movements to transport large transformers'; however, exact numbers are not provided. This would be helpful when assessing the cumulative impact of Abnormal Indivisible Loads (AIL) for the other solar schemes.
- [TA6] The Scheme states that the shared Grid Connection Route utilises different routes from the other solar schemes. This suggests the cumulative impact of the roads will be felt more widely.
- [TA7] The cumulative effects chapter is very limited and only appears to consider the routes associated with the construction routes for Cottam. Whilst this is understood for the purpose of this assessment, the cumulative impact of construction traffic should be considered as there is the potential for the schemes to affect WLDC for five or more years or more that is associated with the construction of the shared grid connection corridor.

Policy Context

National Policy

10.2. Para 5.13.6 of the NPS (EN-1) sets out the that the SoS should consider the substantial impacts of traffic and therefore should ensure '*that the applicant has sought to mitigate these impacts, including during the construction phase of the development. Where the proposed mitigation measures are insufficient to reduce the impact on the transport infrastructure to acceptable levels, the IPC should consider requirements to mitigate adverse impacts on transport networks arising from the development*'. Moreover, applicants may be willing to enter planning obligations to for funding infrastructure and otherwise mitigating adverse impacts.

10.3. With regards to mitigation, the NPS [EN-1] states that the SoS may attach requirements to a consent where there is likely to be substantial HGV traffic that:

- Control numbers of HGV movements to and from the site in a specified period during its construction and possibly on the routing of such movements.

- Make sufficient provision for HGV parking, either on the site or at dedicated facilities elsewhere, to avoid 'overspill' parking on public roads, prolonged queuing on approach roads and uncontrolled on-street HGV parking in normal operating conditions.
- Ensure satisfactory arrangements for reasonably foreseeable abnormal disruption, in consultation with network providers and the responsible police force.

10.4. Furthermore, if the applicant believes the cost of meeting obligations would be economically unviable, it is not in itself justification for the relaxation of any obligations or requirements needed to secure the mitigation.

Local Policy

10.5. The Central Lincolnshire Local Plan policies which are relevant to the scheme are set out below.

10.6. Policy S45: Strategic Infrastructure Requirements states that development proposals will only be granted if it can be demonstrated that there is, or will be, sufficient infrastructure capacity to support and meet all the necessary requirements arising from the proposed development.

10.7. Policy S47: Accessibility and Transport requires development to contribute towards an efficient and safe transport network. Proposals should demonstrate, where appropriate, that they have had regard to the following criteria:

- Minimise additional travel demand through the use of measures such as travel planning, safe and convenient public transport, car clubs, walking and cycling links and integration with existing infrastructure.

10.8. Policy S59: Green and Blue Infrastructure Network states that proposals that cause loss or harm to the green and blue infrastructure network will not be supported unless the need for and benefits of the development demonstrably outweigh any adverse impacts. Where adverse impacts on green infrastructure are unavoidable, development will only be supported if suitable mitigation measures for the network are provided.

Key Impacts

10.9. An overview of the local highway network is provided below:

- A15 (All Sites): Single carriageway two-way road subject to the national speed limit which connects the M180 to the north with the A46 to the south. The road has a predominantly straight alignment throughout.
- A1500 Till Bridge Lane (Cottam 1): Subject to the national speed limit and generally has a straight alignment. It connects the A15 to the east to the village of Sturton by Stow to the west.
- Thorpe Lane (Cottam 1): Rural single lane road that has no central markings. It has a footway running along the eastern side of the road and is subject to the national speed limit.
- Stow Lane (Cottam 1): Rural single lane road that has no central markings and is subject to the national speed limit. Stow Lane connects Ingham Lane to the east to Ingham Road to the west.
- Ingham Road (Cottam 1): Rural single lane road that has no central markings and is subject to the national speed limit. Ingham Road connects Stow Lane to the east to the village of Stow to the west. Ingham Road is subject to a 7.5 tonne environmental weight restriction. However, access is permitted for vehicles over 7.5 tonnes.
- Fleets Lane (Cottam 1): Narrow rural single lane road that has no central markings and is subject to the national speed limit. Fleets Lane connects Ingham Road to the north to Fleets Road to the south.
- Willingham Road (Cottam 1): Rural single lane road that generally has a straight alignment. The road has no central markings and is subject to the national speed limit. Willingham Road connects the village of Fillingham to the east to Fillingham Lane to the west.
- South Lane (Cottam 1): Rural narrow single lane road that has no central markings and is subject to the national speed limit.

- Fillingham Lane (Cottam 1): connects to Willingham Road and is a rural single lane road that generally has a straight alignment. The road has no central markings and is subject to the national speed limit.
- A631 (Cottam 2): Single carriageway where the national speed limit applies. The A631, connects the A157 to the east, to the A630 to the west.
- Access Road north of A631 (Access to Cottam 2): Access road that lies north of the A631, is a narrow road with no central markings where the national speed limit applies.
- B1205 Kirton Road (Cottam 3a and 3b): Single carriageway where the national speed limit applies. The B1205 connects the A15 to the east to the village of Blyton to the west.
- Station Road (Cottam 3b): Single lane road that has a footway located on the eastern side. It connects Pilham Lane to the south to Kirton Road to the north.

10.10. For the construction of the Grid Connection Route, 32 temporary accesses are required, approximately one every kilometre. The locations of these accesses are on the following roads:

- Grid Connection Access 101 – Torksey Ferry Road (Nottinghamshire)
- Grid Connection Access 102, 103 and 104 – Cottam Road (Nottinghamshire);
- Grid Connection Access 105 and 106 – Headsted Bank (Nottinghamshire); Grid Connection Access 107 and 108 – A156 High Street south of Marton (Lincolnshire);
- Grid Connection Access 109, 110, 111 and 112 – A1500 Till Bridge Lane (Lincolnshire);
- Grid Connection Access 113 – Stow Park Road (Lincolnshire);
- Grid Connection Access 114 and 115 – B1241 Normanby Road (Lincolnshire);
- Grid Connection Access 116 and 117 – South Lane (Lincolnshire);
- Grid Connection Access 118 – Willingham Road (Lincolnshire);
- Grid Connection Access 119 – Glentworth Road (Lincolnshire);
- Grid Connection Access 120 – Kexby Road (Lincolnshire);
- Grid Connection Access 121 – Cow Lane (Lincolnshire);
- Grid Connection Access 122 and 123 – B1241 Common Lane (Lincolnshire);
- Grid Connection Access 124 and 125 – School Lane (Lincolnshire);
- Grid Connection Access 126 and 127 – A631 (Lincolnshire);
- Grid Connection Access 128 and 129 – Pilham Lane (Lincolnshire);
- Grid Connection Access 130 and 131 – Pilham Lane (Lincolnshire); and
- Grid Connection Access 132 – B1205 Kirton Road (Lincolnshire).

10.11. The Grid Connection Route will be built out in phases. Each access will be used for approximately 90 days during the construction phase. It is likely that around four or five accesses will be in use concurrently.

Construction

Positive

10.12. There are no positive impacts related to the transport and access.

Neutral

10.13. Construction vehicles will avoid travel during the network peak hours where possible. Therefore, deliveries will be scheduled for between 09:30 and 16:30 where possible.

10.14. The Applicant states that the level of pedestrian and cyclist activity on the roads surrounding the Site is very low meaning that the sensitivity receptor is low. However, the impact to pedestrian amenity acknowledges that the addition of HGVs to the network will affect the relative pleasantness of any pedestrian and cyclist journeys in the area. It is also acknowledged that a number of Public Rights of Way operate through the Site, although usage is relatively low. Notwithstanding this, there will be some effect on the relevant pleasantness of pedestrian journeys in these locations.

Negative

10.15. On a day-to-day basis, the largest vehicle that will be used to deliver equipment to the Site will be a 16.5m articulated vehicle, although a significant proportion of movements will be by smaller vehicles. There will be an average HGV Arrivals and Departures per Day of 38 (76 Trips). During peak construction this will increase to an average of 58 (116 Trips).

10.16. On an average day, there is expected to be 450 workers spread across the Sites. To account for peak periods at the different Sites, 600 construction workers has been taken forward for assessment as a reasonable worst case. For the assessment, construction workers have been spread across the Sites on a proportional basis. Based on a total of 650 construction workers (including 50 at the Energy Storage Facility), the forecast number of cars/LGVs are a total of 233 cars and LGVs (466 trips).

10.17. Where links within the study area connected to public rights of way, it could be argued that an increase in traffic as a result of the construction phase could make it more difficult to cross the road. On Stow Lane, for example, there is forecast to be an additional 286 two-way movements over the course of a day during the construction phase. This is a 39% increase compared to the base. However, over the course of a 10 hour working day, this relates to less than one vehicle every two minutes, which will not make it significantly harder to cross the road. Therefore, the effects on severance in these locations will be minor.

10.18. It is forecast that each access for the Cable Route Corridor / Grid Connection Route will generate up to eight arrivals and eight departures per day for the delivery of material and equipment (16 trips). Around half of these will be HGV trips and half LGV trips. There will also be around 10 construction workers per access, arriving by car and shuttle bus. In total this means that there will be 256 vehicles (512 trips) in relation to the cabling element of the works.

Operational

10.19. During the Scheme's operational phase, there are anticipated to be around five visits to each Site per month for maintenance purposes. These would typically be made by light van or 4x4 type vehicles. Whilst each Site construction compound will have been removed at the end of the construction phase, space will remain within each Site on the access tracks for such a vehicle to turn around to ensure that reversing will not occur onto the highway.

Decommissioning

10.20. The Scheme is anticipated to have a design life of approximately 40 years. At the end of the Scheme's operational life it will be decommissioned. The number of vehicles associated with the decommissioning phase are not anticipated to exceed the number set out for the construction phase.

Cumulative Impacts

10.21. Traffic flows associated with the cumulative schemes will only affect links in the study area that have a low sensitivity. These roads are less sensitive to change compared to the more local/rural roads within the network, which will not be affected by the cumulative schemes. The percentage change on these roads is low. It should also be noted that it is incredibly unlikely that a scenario will occur whereby all cumulative schemes are constructed at the same time.

10.22. The cumulative effects on the local highway network surrounding the Grid Connection Route will also be low, as the cumulative Schemes will not use the same routes. It should be noted that sections of the Grid Connection Route for the Scheme will be shared with Gate Burton and West Burton, although the residual effects will not change as a result of this.

Requirements

Requirement 15 – Construction traffic management plan

10.23. Under this requirement, no part of the authorised development may commence until a construction traffic management plan (which must substantially accord with the outline construction traffic management plan) has been submitted to and approved by the relevant planning authority, in consultation with the relevant highways authority. All construction works associated with the

authorised development must be carried out in accordance with the approved construction traffic management plan.

Requirement 16 – Operational noise

10.24. This requirement stipulate that Work Nos. 1, 2, 3 or 4 may not commence until an operational noise assessment (containing details of how the design has incorporated the operational mitigation measures set out in Section 15.6 of Chapter 15 of the Environmental Statement has been complied with) has been submitted to and approved by the relevant planning authority. The design in the operational noise assessment must be implemented as approved.

Requirement 17 – Permissive paths

10.25. This requirement ensures that Work No. 11 must be provided and open to the public before the date of final commissioning of Work No. 1. It further stipulates that the permissive path must be maintained and accessible by the public for 364 days a year, except where closure is required for maintenance or an emergency. This requirement remains in place until the commencement of decommissioning of the authorised development.

Requirement 18 – Public rights of way

10.26. This requirement stipulates that no part of the authorised development may commence until a public rights of way management plan (substantially in accordance with the outline public rights of way management plan) for any sections of public rights of way to be temporarily closed has been submitted to and approved by the relevant planning authority for that part. The public rights of way management plan must be implemented as approved.

11. Cultural Heritage

Summary

11.1. The list below outlines the main points arising from the review of the Cultural Heritage chapter of the Environmental Statement (Doc. Ref. EN010133/APP/C6.2.13) for the Cottam Solar Project:

- [CH1] There will be a several significant impacts on designated heritage assets including Scheduled Monuments and Grade I listed buildings which are detailed below. This will have a long term impact on these local assets.
- [CH2] Although some of the impacts on heritage assets are considered not significant, there a multiple slight adverse impacts which, in accordance with section 66 of the Planning (Listed Buildings and Conservation Areas) Act 1990, and when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance. Indeed, the NPPF states that when a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal.

Policy Context

National Policy

11.2. Section 5.8 of the National Policy Statement for Energy (NPS) (EN-1) states that the decision maker should consider the impact of a proposed development on any heritage assets. They should take into account the particular nature of the significance of the heritage assets and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between conservation of that significance and proposals for development.

11.3. Paragraph 199 of the NPPF 2023 states '*When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance*'.

Local Policy

11.4. The Central Lincolnshire Local Plan policies which are relevant to the scheme are set out below.

11.5. Policy S57: The Historic Environment states that development should '*protect, conserve and seek opportunities to enhance the historic environment. In instances where a development proposal would affect the significance of a heritage asset (whether designated or non-designated), including any contribution made by its setting, the applicant will be required to undertake and provide the following, in a manner proportionate to the asset's significance:*

a) describe and assess the significance of the asset, including its setting, to determine its architectural, historical or archaeological interest; and

b) identify the impact of the proposed works on the significance and special character of the asset, including its setting; and

c) *provide a clear justification for the works, especially if these would harm the significance of the asset, including its setting, so that the harm can be weighed against public benefits.'*

Key Impacts

Construction

Positive

11.6. There are no positive effects during construction.

Negative

11.7. There is the potential for there to be Slight Adverse effects at five Scheduled Monuments, and up to Moderate Adverse effects at one Scheduled Monument (Thorpe medieval settlement – NHLE 1016978). This latter impact could result in 'significant' effects in EIA terms, and although impacts resulting from the construction phase are medium term and reversable, the visual impacts of the constructed Scheme would continue into and throughout the operational phase. There is also the potential for Large Adverse effects upon the Site of a college and Benedictine Abbey, St Mary's Church, Stow (NHLE 1012976) which would also be a 'significant' effect, should this occur.

11.8. Most of the identified impacts to archaeological remains are 'not significant' in EIA terms, with effects mostly ranging between Negligible and Slight Adverse. However, as noted above there is the potential along the Shared Cable Corridor for up to Moderate Adverse impacts to what are likely to be regionally important remains of Medium value to occur, which could potentially result in 'significant' effects (i.e. at AR67-75). However, these impacts are not fully understood at present as the full results of the archaeological evaluations recently undertaken along the Shared Cable Corridor are not yet available, nor has the precise design for the cable route and associated temporary infrastructure been finalised.

11.9. There could also be up to Large Adverse effects upon a kiln of possible Iron Age/Romano-British date at AR22a which would be fully excavated ahead of the construction of the battery storage area at the Cottam 1 Site. However, the significance of effects for this asset are uncertain as the features identified here during the evaluation are undated and only tentatively interpreted as a kiln, and therefore the value (and hence significance of effects) might be of a lesser magnitude.

11.10. It is predicted that there would be Negligible Adverse impacts at three Grade II Listed Buildings and Minor Adverse impacts at one Grade II Listed Building and two Grade II* Listed Buildings, in each case resulting in Slight Adverse effects.

11.11. There would be additional visual impacts during the construction phase along the cable route corridor, which would be visible within the settings of two Grade II Listed Buildings: Signal Box at Stow Park Station (NHLE 1146606) and Stow Park Station (NHLE 1064058).

11.12. The visual impact of the construction traffic, temporary compounds and haul roads, along with the increasing visibility of the solar arrays as they are constructed at a minimum of 1.9km distant from the western edge of the Registered Park and Garden, and moreover, taking account of the layering effect that would occur in a relatively flat landscape, this would have a very low-level industrialising effect upon the rural character of part of the distant Trent valley landscape. It is considered that this would result in Minor Adverse impacts which for an asset of Medium value would result in Slight Adverse effects.

Operational

Positive

11.13. The impacts to buried archaeological features during the operational phase would be of a largely beneficial nature, due to these remains being taken out of the agricultural cycle of regular ploughing which most of the field parcels within the Order Limits are currently subject to.

Neutral

At 15 of the Scheduled Monuments, the assessment concluded that it was unlikely that any visibility of the Scheme would be possible.

Negative

11.14. At five of the Scheduled Monuments, potential visibility of elements of the Scheme was identified, but in general this would be restricted to slight glimpses contained within narrow arcs of view and/or at such a distance that this would be barely perceptible. Consequently, these would result in changes of Negligible Adverse magnitude to the significance of these heritage assets, resulting in, at worst, Slight Adverse effects. At Thorpe Medieval Settlement (NHLE 1016978), however, the close proximity of the Scheme would result in much greater visual impact, this being across a wide arc of view dominated by an element of the historic landscape that contributes to the significance of the Scheduled Monument and allows its significance to be appreciated. These considerable changes to the setting would result in what are considered to be Moderate Adverse impacts to the significance of the heritage asset. The significance of effects matrix indicates that this should be scored as either Moderate or Large Adverse effects. However, as the field parcel to the north only

possesses a slight legibility of the medieval field system, in this case two field boundaries reflecting the likely edges of former strips field reflecting the medieval agricultural practices (or possibly a furlong, though this cannot be proven), professional judgement suggests the effects would be of Moderate Adverse significance, which are nevertheless considered 'significant' in terms of the ES assessment.

11.15. During the operational phase of the Scheme, there would be impacts to five Grade II Listed Buildings and two Grade II* Listed Buildings, all of which are considered to be impacts of Slight Adverse magnitude.

11.16. For Glentworth Hall and Fillingham Castle the significance of effects matrix indicates that these effects should be scored as either Slight or Moderate Adverse, and the lower of these scores was decided upon since the visibility of the Scheme would be of a limited nature considering the distances involved. Similarly, for Thorpe in the Fallows Farmhouse, Mount Pleasant Farmhouse and Corringham Windmill, the significance of effects matrix indicates that these effects should be scored as either Neutral or Slight Adverse, and the higher score was chosen to help highlight where mitigation measures could reduce or remove the adverse effects through effective screening.

11.17. For most of the non-designated historic buildings assessed, the effects would be either Neutral or Slight Adverse effects, i.e., 'not significant', but at Turpin Farm (HB11), Corringham Grange Farm (HB18) and Blyton Grange Farm (HB22), the Major Adverse impacts would result in 'significant' Moderate Adverse effects in the absence of additional mitigation.

11.18. The Heritage Statement provides an assessment of potential impacts of the Scheme at the Fillingham Castle Grade II Registered Park and Garden (NHLE 1000977). The visual impacts can be characterised as 'Slight changes to setting, resulting in a loss of significance or its enhancement', and therefore impacts of a Minor Adverse magnitude. For a Grade I Listed Building of High value, this would result in effects of Slight or Moderate Adverse significance in terms of the scoring methodology adopted by the ES, and for the Grade II Registered Park and Garden, which is of Medium value.

Decommissioning

11.19. Decommissioning is expected to take between 12 and 24 months and will be undertaken in phases, and for the purposes of the assessment is expected to occur no earlier than 40 years after the commencement of operation of the Scheme. The decommissioning phase would require plant movement and other activities similar to those employed during the construction phase, which could have an adverse impact upon the settings of nearby heritage assets. The ES assesses that the impact would be neutral as the impacts are no greater than during the operational phase, and would be temporary, short term and reversible in nature.

Cumulative

11.20. For the settings of heritage assets, it is considered that the zone of influence (ZOI) is very much constrained for those assets located within the lowlands of the Trent valley, as confirmed by the ZTVs for these assets produced as part of the Heritage Statement. The only 'significant' effect identified due to impacts to the setting of a designated heritage asset is at the Thorpe medieval settlement Scheduled Monument (NHLE 1016978), this being due to the close proximity of elements of the Cottam 1 Site.

11.21. Slight Adverse effects (i.e., effects that are 'not significant') have been identified at the following Scheduled Monuments for the Scheme:

- Deserted village of Dunstall (NHLE 1004996);
- Roman villa west of Scampton Cliff Farm (NHLE 1005041);
- Southorpe medieval settlement (NHLE 1016794);
- Gilby medieval settlement (NHLE 1016795); and
- Coates medieval settlement and moated site (NHLE 1016979).

11.22. Slight Adverse effects (i.e., effects that are 'not significant') have also been identified at the following Listed Buildings for the Scheme:

- Fillingham Castle (NHLE 1166045);
- Glentworth Hall (NHLE 1063348);

- Former stables at Glentworth Hall (NHLE 1166094);
- Thorpe in the Fallows Farmhouse (NHLE 1308921);
- Mount Pleasant Farmhouse east of Laughton (NHLE 1317186); and
- Corringham Windmill (NHLE 1359417).

11.23. Slight Adverse effects (i.e., effects that are 'not significant') have also been identified at the following Registered Park and Garden for the Scheme:

- Fillingham Castle (NHLE 1000977).

11.24. It is considered that there could only be cumulative effects at those heritage assets identified above (in Paragraph 13.9.2 where views from the Lincoln Cliff contribute to the significance of the asset:

- Roman villa west of Scampton Cliff Farm (NHLE 1005041 Fillingham Castle (NHLE 1166045/NHLE 1000977);
- Glentworth Hall (NHLE 1063348); and
- Former stables at Glentworth Hall (NHLE 1166094).

11.25. This is due to the fact that the other NSIPs in the vicinity of the Scheme would also be likely to be visible from these elevated viewpoints along the Lincoln Cliff, but not from those situated in the Trent Valley. Should all of the NSIPs identified in paragraph 13.10.1 above be permitted and constructed, then the Slight Adverse effects identified at those heritage assets located on the Lincoln Cliff with extensive views across the Trent valley would increase in magnitude as a result of the cumulative effects, and whilst it is possible that this could result in Moderate Adverse effects or above (i.e., 'significant' effects) at one or more of these assets, this would require the results of further detailed design and assessment of the other NSIPs to confirm.

Requirements

Requirement 12 – Archaeology

11.26. This requirement stipulates that the authorised development must be implemented in accordance with the written scheme of investigation.

Requirement 13 – Construction environmental management plan

11.27. Under this requirement, no part of the authorised development may commence until a construction environmental management plan (which must substantially accord with the outline construction environmental management plan) has been submitted to and approved by the relevant planning authority. All construction works associated with the authorised development must be carried out in accordance with the approved construction environmental management plan.

11.28. Provision for archaeological mitigation and monitoring is detailed in the Written Scheme of Investigation (WSI, see ES appendix 13.7 (Doc. Ref. EN010133APP/C6.3.13.7)). The WSI must be adhered to during constructional phases. Areas where concrete feet are required will be laid out by a surveyor in line with the requirements of the WSI.

12. Soils and Agriculture

Summary

12.1. The list below outlines the main points arising from the review of the Soils and Agriculture chapter of the Environmental Statement (Doc. Ref. EN010133/APP/C6.2.9) for the Cottam Solar Project:

- [AG1] IEMA Guidance has been utilised for assessing impact on agricultural holdings. However, the publication is principally concerned with soil functions and does not provide methodology for assessing impacts on agricultural holdings.
- [AG2] It is not clear if any tenants are displaced, if so, this would be an additional socio-economic adverse effect.
- [AG3] The cumulative assessment is based on the absence of site specific assessments which are required to determine Agricultural Land Classification (ALC). It is accepted that during the authoring of this chapter the information for these sites were likely unavailable; however, given Gate Burton and West Burton are both now accepted or are already in the examination process it is presumed the data for the other Schemes is now available.

Policy Context

National Policy

12.2. Paragraph 5.10.8 of the NPS (EN-1) outlines that applicants should '*seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 3b, 4 and 5) except where this would be inconsistent with other sustainability considerations*'.

12.3. Under Paragraph 5.10.15 of the NPS (EN-1), the decision maker should ensure that '*applicants do not site their scheme on the best and most versatile agricultural land without justification. It should give little weight to the loss of poorer quality agricultural land (in grades 3b, 4 and 5), except in areas (such as uplands) where particular agricultural practices may themselves contribute to the quality and character of the environment or the local economy*'.

12.4. The draft Overarching National Policy Statement for Energy (EN-1) states similar advice to applicants and the SoS that they should seek to minimise impacts on BMV (see paragraphs 5.11.12 and 5.11.34). Where it is sited on BMV, it should duly justify as to why other land cannot be used. The SoS should also '*take into account the economic and other benefits of that land*'.

12.5. Paragraph 3.10.136 of draft National Policy Statement for Renewable Energy Infrastructure (EN-3) reiterates that the SoS should take into account '*the economic and other benefits of the best and most versatile agricultural land. The Secretary of State should ensure that the applicant has put forward appropriate mitigation measures to minimise impacts on soils or soil resources*'.

12.6. The NPPF also states that BMV is land in grades 1, 2 and 3a of the Agricultural Land Classification.

12.7. In view of the above, it is expected that the loss of both BMV and poorer quality land should be taken into account. This is particularly true given the agriculture lands contribution to the quality and character of the environment or the local economy.

Local Policy

12.8. The Central Lincolnshire Local Plan policies which are relevant to the scheme are set out below.

12.9. Policy S67: Best and Most Versatile Agricultural Land states that significant development resulting in the loss of the best and most versatile agricultural land will only be supported if:

- The need is clearly established;
- The benefits outweigh the need to protect such land, when taking into account the economic and other benefits of the best and most versatile agricultural land;
- The impacts of the proposal upon ongoing agricultural operations have been minimised through the use of appropriate design solutions; and

- Once the development has ceased its useful life then the land should be returned to its former use.

12.10. The council expects all these tests to be met, particularly in relation to the economic value of the land to WLDC and its inhabitants which is in line with national policy. Moreover, it is expected that the land would be restored to its former use. This is particularly important as the agricultural land is an important contributor to the local economy and culture of the region.

Key Impacts

12.11. The following section identifies the impacts on agriculture during construction, operation and decommissioning. It set out the positive, neutral and negative impacts for each stage.

Construction

Positive

12.12. No positive impacts on agricultural land during construction have been predicted in the ES, and would not be expected, as construction works are generally disruptive in nature.

Neutral

12.13. There are no neutral impacts identified during construction.

Negative

12.14. Construction work will start the temporary curtailment of arable production within the Site. The land does not cease to be agricultural land whilst cropping or grazing is suspended while construction work is taking place and there is no actual loss of agricultural land resource, therefore no mitigation is proposed. The residual effect of construction on the agricultural land resource is considered minor and not significant.

12.15. Solar panel construction work will involve trafficking the land in a similar manner to the current arable land use, where high axle vehicles are regularly used (e.g. combine harvesters). Heavy plant use during construction will include excavators for digging trenches and cranes for placing substation and storage modules. The Soil Management Plan (SMP) (outline SMP provided in EN010133/APP/C6.3.19.2) is embedded mitigation that aims to conserve the soil resource through construction activity and therefore no additional mitigation is proposed. The resulting short term, reversable and local effect of construction disturbance on the soil resource across the Scheme is considered minor and not significant.

12.16. The temporary curtailment of farming practices for each of the four farming businesses will result in a reduction in cropped area for these enterprises. This is considered as a constraint however farming practices will not be entirely terminated for these businesses – only the land that is occupied by the Scheme. The resulting short term, reversable and local effect of construction disturbance on the farm businesses occupying land within the Sites will be a minor impact and not significant.

Operational

Positive

12.17. There are not considered to be any material positive impacts upon agriculture or soils.

Neutral

12.18. There are no neutral impacts identified during construction.

Negative

12.19. There will be no loss of agricultural land resource during operation. With no change there is no mitigation proposed and there will be a negligible impact, which is not considered significant.

Decommissioning

Positive

12.20. Decommissioning of the Scheme will allow a return to arable management of the land. The resulting short term, reversable and local effect of decommissioning on the return of agricultural land to the enterprises of the occupying farm businesses will be a minor impact, beneficial and not significant. No further mitigation is proposed.

Neutral

12.21. It is noted that there is an intention to return the land to agricultural land. No obstructions will be left in the soil that could interfere with cultivation (e.g. cables will be removed) and no changes to the physical characteristics of the soil will have taken place that could influence ALC grade. There will be a negligible impact, that is not considered to be significant. No mitigation is proposed.

Negative

12.22. Decommissioning will involve activities similar to that during construction, including trafficking the land in a similar manner to the current arable land use (e.g. combine harvesters). The measures from the SMP also extend to decommissioning and land restoration and it will limit impacts to the soil resource. The SMP covers the appropriate handling of stored soil, aftercare of the land and identification of remediation of any areas of compacted soils. The resulting residual impacts will be short term, reversable and localised, which is considered to be a minor impact that is not significant.

Cumulative

12.23. The cumulative assessment focuses on Tillbridge Solar, Gate Burton Energy Park, West Burton Solar, Heckington Fen Solar, Temple Oaks Renewable Energy Park and Mallard Pass Solar. The Heckington Fen site is shown within an area of High Likelihood of BMV land. Mallard Pass predominantly occupies an area of Low Likelihood of BMV land. The four remaining sites occupy predominantly Moderate Likelihood of BMV land as for the Cottam Solar Project Order Limits.

Positive

12.24. There are no positive impacts identified.

Neutral

12.25. For the Loss of Agricultural Land Resource, all six cumulative effect sites will be temporary and time limited development, with any actual loss of agricultural land limited to the small extent of switchgear housings and substations. Therefore the residual effect of each of these six sites on the agricultural land resource is predicted to be negligible, as for Cottam.

12.26. The soil resource present at each of the six cumulative sites will experience little disturbance, and the risk of compaction from trafficking reduced (lower frequency, lower weight and able to avoid wet conditions) when compared to annual arable crop management. Therefore the residual effect of each of these six sites on the soil resource is predicted to be negligible, as for Cottam.

12.27. Some farm businesses occupying land within the six cumulative sites may have elevated sensitivity to a solar farm development in comparison to the four farm businesses at Cottam. For instance a farm business may have a full agricultural tenancy providing security of tenure which if obliged to vacate, would be very difficult to replace. However without any published detail on the occupancy of the six cumulative sites, there is no justification to claim any greater significance of effect than at Cottam. Therefore the residual effect of each of these six sites on farm businesses is predicted to be negligible, as for Cottam.

12.28. The only plausible interaction between the six cumulative sites and Cottam is agricultural occupancy by a farm business across multiple different sites. If this does occur it is likely to not be a significant adverse effect for that farm business, but an assessment would not be possible without the farming circumstances baseline for the affected unit. There will be no interaction of impact for soils or agricultural land resource between any of the sites. There is therefore no significant cumulative effect identified for soils and agriculture for the six cumulative sites.

Negative

12.29. There are no positive impacts identified.

Requirements

Requirement 13 – Construction environmental management plan

12.30. Under this requirement, no part of the authorised development may commence until a construction environmental management plan (which must substantially accord with the outline construction environmental management plan) has been submitted to and approved by the relevant planning authority. All construction works associated with the authorised development must be carried out in accordance with the approved construction environmental management plan.

12.31. Site inspections by a suitably experienced soil scientist to ensure compliance with the Soil Management Plan and identify any emerging issues.

Requirement 14 – Operational environmental management plan

12.32. Requirement 14 – Operational environmental management plan: Before the date of final commissioning of the authorised development, an operational environmental management plan (which must substantially accord with the outline operational environmental management plan) must be submitted to and approved by the relevant planning authority. The operational environmental management plan must be implemented as approved.

12.33. A Soil Resource Management Plan (SRMP), in accordance with the Outline Soil Management Plan (Doc. Ref. EN010133/APP/C7.18) will detail how the risk of causing surface compaction can be minimised and how to remove compaction if it has occurred. It will be particularly important to avoid causing soil compaction during the decommissioning phase. To reduce ground pressure, tracked plant and machinery should be equipped with low ground pressure tyres. In areas where soil may need to be reinstated (e.g., where buildings are demolished, or tracks taken up) with the guidance in Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (PB13298) or reference appropriate at the time may provide useful guidance.

Requirement 19 – Soils management

12.34. This requirement stipulates that no part of the authorised development may commence until a soils resource management plan (substantially in accordance with the outline soils resource management plan) for that part has been submitted to and approved by the relevant planning authority. The soils resource management plan must be implemented as approved.

Requirement 21 – Decommissioning and restoration

12.35. This requirement provides that within 12 months (or such longer period as agreed with the relevant planning authority) of the date the undertaker decides to decommission any part of the authorised development, the undertaker must submit to the relevant planning authority for its approval a decommissioning environmental management plan for that part which substantially accords with the decommissioning statement. No decommissioning works must be carried out until the relevant planning authority has approved the plan submitted in relation to such works. The plan submitted must be implemented as approved. This requirement is without prejudice to any other consents or permissions which may be required to decommission any part of the authorised development.

12.36. A Soil Resource Management Plan (SRMP) will be prepared (if required) in accordance with the Outline SRMP setting out measures to manage the reinstatement of any soils and minimising soil disturbance and soil compaction when extracting the solar PV panel's supporting infrastructure.

12.37. In areas where soil may need to be reinstated (e.g., where buildings are demolished, or tracks taken up) with the guidance in Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (PB13298) or reference appropriate at the time may provide useful guidance.

13. Climate Change

Summary

13.1. The list below outlines the main points arising from the review of the Climate Change chapter of the Environmental Statement for the Cottam Solar scheme (Doc. Ref. EN010133/APP/C6.2.7):

- [CC1] ES states beneficial is significant given the reduction in Green House Gas (GHG) Emissions.
- [CC2] The ES states no residual effects during construction, but the ES does demonstrate that there is a significant amount of embodied carbon in all phases of the scheme, i.e. construction, operation and decommissioning. This must be given weight in the decision making process.

Policy Context

National Policy

13.2. Section 4.8 of NPS EN-1 addresses climate change adaptation in energy infrastructure development. It notes that the decision maker should take the effects of climate change into account when developing and consenting infrastructure, referring also to the potential long-term impact of climate change.

13.3. New energy infrastructure will typically be a long-term investment and will need to remain operational over many decades, in the face of a changing climate. Consequently, applicants must consider the impacts of climate change when planning the location, design, build, operation and, where appropriate, decommissioning of new energy infrastructure (paragraph 4.8.5). The IPC (now ExA) should be satisfied that applicants for new energy infrastructure have considered the potential impacts of climate change using the latest UK Climate Projections available at the time the ES was prepared to ensure they have identified appropriate mitigation or adaptation measures. This should cover the estimated lifetime of the new infrastructure (paragraph 4.8.6).

13.4. EN-1 notes the energy NPSs should speed up the transition to a low carbon economy and thus help to realise UK climate change commitments sooner than continuation under the current planning system.

13.5. Paragraph 2.2.5 notes the UK economy is reliant on fossil fuels, and they are likely to play a significant role for some time to come. Most of our power stations are fuelled by coal and gas. The majority of homes have gas central heating, and on our roads, in the air and on the sea, our transport is almost wholly dependent on oil. Paragraph 2.2.6 identifies that the UK needs to wean itself off such a high carbon energy mix: to reduce greenhouse gas (GHG) emissions, and to improve the security, availability, and affordability of energy through diversification.

13.6. EN-1 also notes that storage has a key role to play in achieving net zero and providing flexibility to the energy system.

13.7. Section 4.9 of the draft NPS (EN-1) focuses on climate change adaptation and reiterates the need to minimise the most dangerous impacts of climate change.

13.8. Draft NPS (EN-3) requires the applicant to consider the design life of solar panel efficiency over time when determining the period for which consent is required. An upper limit of 40 years is typical, although applicants may seek consent without a time-period or for differing time-periods of operation.

Local Policy

13.9. The Central Lincolnshire Local Plan policies which are relevant to the scheme are set out below.

13.10. Policy S11: Embodied Carbon requires development to s to reduce the development's embodied carbon content, through the careful choice, use and sourcing of materials. Moreover, all major development proposals should explicitly set out what opportunities.

13.11. The SoS is reminded that from the 1 January 2025, there will be a requirement for a development proposal to demonstrate how the design and building materials to be used have been informed by a

consideration of embodied carbon, and that reasonable opportunities to minimise embodied carbon have been taken.

13.12. Policy S14: Renewable sets out the position that renewable energy schemes will be supported where the direct, indirect, individual and cumulative impacts on the following considerations are, or will be made, acceptable. To determine whether it is acceptable, the following tests will have to be met:

- The impacts are acceptable having considered the scale, siting and design, and the consequent impacts on landscape character; visual amenity; biodiversity; geodiversity; flood risk; townscape; heritage assets, their settings and the historic landscape; and highway safety and rail safety.
- The impacts are acceptable on aviation and defence navigation system/communications.
- The impacts are acceptable on the amenity of sensitive neighbouring uses (including local residents) by virtue of matters such as noise, dust, odour, shadow flicker, air quality and traffic.

13.13. Policy S16: Wider Energy Infrastructure states that WLDC will proposals which are necessary for, or form part of, the transition to a net zero carbon. However, proposals should take all reasonable opportunities to mitigate any harm arising from such proposals.

13.14. Policy S20: Resilient and Adaptable Design requires design proposals to be adaptable to future social, economic, technological and environmental requirements in order to make buildings both fit for purpose in the long term and to minimise future resource consumption. The relevant tests to this Scheme must be met for proposals to be deemed acceptable:

- Allow for future adaptation.
- Be resilient to flood risk, from all forms of flooding.

Key Impacts

13.15. The following section identifies the impacts on climate change during construction, operation and decommissioning. It set out the positive, neutral and negative impacts for each stage.

Construction

Positive

13.16. The ES does not identify any significant residual effects on climate change during the construction of the Scheme.

Neutral

13.17. There are no neutral effects identified.

Negative

13.18. As set out in Volume 1, Chapter 7: Climate Change [EN010133/APP/C6.2.7], the ES identifies the greatest impact of GHGs is the result of embodied carbon in the materials used for construction. Of these, the manufacture and supply of PV panels and batteries will be the largest source of GHG emissions. The worst case (Option B) total GHG emissions from the construction phase are estimated to equate to around 444,475 tCO_2e. When annualised, the total annual construction emissions equate to around 222, 237 tCO_2e. GHG emissions from the construction of the Scheme are considered to have a minor adverse effect on the climate (a negligible significant effect is not possible where any GHG emissions are released to the atmosphere). The overall effect on GHGs from construction is considered not significant in EIA terms.

Operational

Positive

13.19. The ES concludes that overall, the Scheme will provide a major beneficial effect on the climate and a net reduction in GHG emissions over the lifetime of the Scheme. Over the estimated 40 year

lifespan there would be a reduction of 5,973,729 tCO_2e from the Scheme compared to the scenario where the Scheme does not go ahead.

Neutral

13.20. There are no neutral effects identified.

Negative

13.21. GHG emissions will be generated as a result of operational activities such as the transportation of operational workers to and from the Site, water consumption and replacement of on-site materials. The production of replacement batteries at the midpoint of the project's lifespan is the greatest contribution to GHG emissions during the operational stage, estimated to equate to around 277,300 tCO_2e in the worst case (Option B). This accounts for 89% of the total operational emissions. Despite this, it is anticipated that the magnitude of effect is likely to be low.

Decommissioning

Positive

13.22. The ES does not identify any significant residual effects on climate change predicted during the decommissioning of the Scheme.

Neutral

13.23. There are no neutral effects identified.

Negative

13.24. Despite the ES not identifying any significant residual effects on climate change during decommissioning, the ES also admits a '*there is uncertainty over the total estimate of GHG emissions that will be produced'* during this stage. The SoS is therefore minded to keep this in mind during their assessment of the Scheme. Whilst a calculation of 25,074 tCO_2e has been provided, there is a possibility that the emissions could be higher. It is expected that emissions of GHGs will be far lower than construction and that the main source of emissions from this stage will be from worker transportation. It is expected that the magnitude of effect will be low and therefore the decommissioning stage will result in only minor adverse effects which is not significant in terms of EIA.

Cumulative

13.25. The cumulative effect of other solar projects (West Burton, Gate Burton, Tillbridge) will also be beneficial in terms of climate change resilience given that the combined effect of the renewable energy will serve to counter the effects of climate change.

Requirements

13.26. There are no requirements specifically related to climate change in the draft Development Consent Order.

14. Noise and Vibration

Summary

14.1.1. The list below outlines the main points arising from the review of the Noise and Vibration chapter of the Environmental Statement for the Cottam Solar Project:

- [NV1] Information has been taken from technical guidance documents to identify thresholds levels at which negligible, minor, moderate and major impacts occur. However, the mapping of these impact threshold levels for construction noise underestimates significance.
- [NV2] Paragraph 15.4.21 (beneath Table 15.4) of the ES chapter states that construction noise levels along the cabling route are assessed using a fixed noise level. No information has been provided as to how the noise level was selected as no baseline noise surveys were undertaken along the cabling route.
- [NV3] Detailed information on the noise survey methodology and contextual information about the survey locations is not reported.
- [NV4] It is noted that maps of the short-term and long-term monitoring locations are provided, however, it is unclear how the measured noise levels have been mapped to receptor locations for the impact assessment.
- [NV5] Operational phase vibration effects were to be included as outlined within the Scoping Opinion. However, no information on operation phase vibration is reported.
- [NV6] The Noise and Vibration assessments present the calculation results and impact magnitudes but omit key information about how these outcomes were derived, which prevents the stated outcomes from being verified.
- [NV7] The assessment reports daytime noise impacts only, which is consistent with the stated construction working hours in Chapter 4. However, it is possible that some night-time working may be required as the cabling route intersects a railway line (adjacent to Cottam 3b) and several roads, meaning that a railway possession or night-time road closure may be required to complete the works. Night-time working would lower the assessment threshold level to 45 dB L_{Aeq} (as a worst-case) and may result in greater impact magnitudes than reported for this activity.
- [NV8] The noise prediction methodology and outcomes reported in the ES Chapter and Appendix 15.3 omit the following pertinent information which is required to verify the overall impact to receptors.
- [NV9] As no assumptions are declared for the vibration calculations, it is unclear whether the predictions are based on a percussive piling method and whether the values are during steady-state or start-up/run down conditions.
- [NV10] Information about the sound sources considered in the operation phase assessment is required to confirm the scope of the assessment and assumptions made in the noise modelling.
- [NV11] A requirement of a BS 4142 assessment is to include information about uncertainty within the assessment. No information on this is provided.
- [NV12] Appropriate types of noise mitigation measures are proposed to control noise emissions from the project, however, the stated performance requirement for the acoustic louvres is ambiguous.

Policy Context

National Policy

14.2. National Policy Statement (NPS) EN-1 states that should demonstrate good design through selection of the quietest cost-effective plant available; optimisation of plant layout to minimise noise emissions; and, where possible, the use of landscaping, bunds or noise barriers to reduce noise transmission.

14.3. The NPS also states that the SoS should not grant development consent unless it is satisfied that the proposals will meet the following aims:

- Avoid significant adverse impacts on health and quality of life from noise.
- Mitigate and minimise other adverse impacts on health and quality of life from noise.
- Where possible, contribute to improvements to health and quality of life through the effective management and control of noise.

14.4. Moreover the SoS should consider if mitigation methods needed for construction and operational noise over and above any which may form part of the project application. The mitigation methods may include:

- Engineering: reduction of noise at point of generation and containment of noise generated.
- Lay-out: adequate distance between source and noise-sensitive receptors; incorporating good design to minimise noise transmission through screening by natural barriers, or other buildings.
- Administrative: restricting activities allowed on the site; specifying acceptable noise limits; and taking into account seasonality of wildlife in nearby designated sites

Local Policy

14.5. The Central Lincolnshire Local Plan policies which are relevant to the scheme are set out below.

14.6. There is no specific local policy that relates to noise; however, Policy S47: Accessibility and Transport requires development should not result in adverse noise and vibration taking into account surrounding uses of the application site.

Key Impacts

Construction & Decommissioning

Positive

14.7. There are no positive impacts from noise and vibration identified during construction and decommissioning.

Neutral

14.8. There are no neutral impacts from noise and vibration identified during construction and decommissioning.

Negative

14.9. Construction noise levels at all receptors throughout the Scheme are predicted to be within the daytime construction noise criteria of 65 dB(A). Construction noise is temporary and it is assumed that all construction activities will be happening simultaneously across the Scheme (worst-case scenario). Construction activity on the Sites and cable corridor would likely be experienced by limited receptors at any given time as work progresses across the Scheme. Therefore, for construction noise, the magnitude of change is negligible which results in a moderate/minor residual effect which is not significant for the purposes of EIA regulations.

14.10. Construction activities are temporary and it is considered that any periods of construction vibration experienced at each separate receptor would unlikely exceed one month. Construction activity on the Sites would likely be experienced by limited receptors at any given time as work progresses across the Scheme. Therefore, for construction vibration, the magnitude of change is negligible which results in a moderate/minor residual effect which is not significant for the purposes of the EIA regulations.

14.11. Noise and vibration effects during the decommissioning phase will be similar or less than the noise effects during the construction phase and therefore not deemed significant in terms of EIA.

Operational

Positive

14.12. There are no positive impacts from noise and vibration identified during operation.

Neutral

14.13. None stated.

Negative

14.14. The primary sources of noise from the operational development are the inverters and transformers serving the solar panels. Overall, operational noise levels at the nearest receptors to the Scheme would exceed the existing background noise levels in many cases. Mitigation has been used to ensure noise levels do not result in significant impacts throughout the Scheme during the operational phase and consequently the magnitude of change is considered negligible, which results in a moderate/minor residual effect and therefore not considered significant for the purposes of the EIA Regulations.

Requirements

14.15. A construction noise monitoring scheme shall be developed and agreed with appropriate stakeholders following appointment of a contractor and prior to commencement of construction works. The CEMP would also set out a scheme for the provision of monthly reporting information to and from local residents to advise of potential noisy works that are due to take place and for monitoring of noise complaints and reporting to the Applicant for immediate investigation and action.

Requirement 13 – Construction environmental management plan

14.16. Under this requirement, no part of the authorised development may commence until a construction environmental management plan (which must substantially accord with the outline construction environmental management plan) has been submitted to and approved by the relevant planning authority. All construction works associated with the authorised development must be carried out in accordance with the approved construction environmental management plan.

14.17. It is expected that construction works will be undertaken in accordance with the best practicable means (as defined in Section 72 of the Control of Pollution Act 1974 (Ref 2-1)), to minimise noise and vibration effects. Noise control measures will be consistent with the recommendations of the current version of BS 5228 'Code of Practice for Noise and Vibration Control on Construction and Open Sites' – 'Part 1: Noise' and 'Part 2: Vibration' (BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014) (Ref 2-2 and Ref 2-3).

Requirement 14 – Operational environmental management plan

14.18. Requirement 14 – Operational environmental management plan: Before the date of final commissioning of the authorised development, an operational environmental management plan (which must substantially accord with the outline operational environmental management plan) must be submitted to and approved by the relevant planning authority. The operational environmental management plan must be implemented as approved.

14.19. The Environmental Manager will regularly record compliance in a logbook. The OEMP will detail the frequency. 3.0m high acoustic barriers will be constructed around sections of the BESS area at Cottam 1.

Requirement 16 – Operational noise

14.20. This requirement stipulate that Work Nos. 1, 2, 3 or 4 may not commence until an operational noise assessment (containing details of how the design has incorporated the operational mitigation measures set out in Section 15.6 of Chapter 15 of the Environmental Statement has been complied with) has been submitted to and approved by the relevant planning authority. The design in the operational noise assessment must be implemented as approved.

15. Glint and Glare

Summary

15.1. The list below outlines the main points arising from the review of the Glint and Glare chapter of the Environmental Statement [Doc. Ref. EN010133/APP/C6.2.16] for the Cottam Solar Project:

- [GG1] It is not clear why Headon airfield is not considered as it appears that one of the runways may have issues and within the pilots' field of view.
- [GG2] A physical survey of the site and its environs is expected to be able to fully assess the receptors and study area.
- [GG3] The Scoping Opinion reported that river users which be included within the receptors which were to be assessed as part of the Glint and Glare assessment. A statement has been added to cover river users but specifically on the River Trent as being too far away and mentions that the River Till is not considered navigable. However, no substantiation has been provided for this statement.
- [GG4] The strategy of additional vegetation screening mentioned and temporary screening does not define the species of the vegetation which we would expect to be dense and coniferous in nature. The height of vegetation is not mentioned. Provided the that the correct species of vegetation are chosen and the temporary obstructions are properly designed then the mitigation should be fit for purpose.

Policy Context

National Policy

15.2. Paragraph 3.10.93 of the draft NPS (EN-3) states that '*solar panels may reflect the sun's rays at certain angles, causing glint and glare. Glint is defined as a momentary flash of light that may be produced as a direct reflection of the sun in the solar panel. Glare is a continuous source of excessive brightness experienced by a stationary observer located in the path of reflected sunlight from the face of the panel. The effect occurs when the solar panel is stationed between or at an angle of the sun and the receptor*'.

15.3. Moreover, when a glint and glare assessment is undertaken, the potential for solar PV panels, frames and supports to have a combined reflective quality may need to be assessed, although the glint and glare of the frames and supports is likely to be significantly less than the panels.

Key Impacts

Construction & Decommissioning

15.4. Glint and glare effects can occur from any solar panels that are installed at the Scheme Sites. However, as not all panels will be deployed during the construction or decommission phase, the length and intensity of any solar reflections will be less than or equal to the operational phase.

15.5. The ES has therefore only considered Operational Effects, which represents the worst-case scenario for all development stages of the Scheme.

Positive

15.6. There are no positive impacts from glint and glare identified during construction and decommissioning.

Neutral

15.7. There are no significant effects from glint and glare identified during the construction and decommissioning phases.

Negative

15.8. There are no negative impacts from glint and glare identified during construction and decommissioning.

Operational

Positive

15.9. There are no positive impacts from glint and glare identified during operation.

Neutral

15.10. The worst case scenario effects without mitigation are predicted to be minor/negligible adverse (for either the fixed or tracker options) in respect of aviation receptors. Therefore, mitigation is not required for the aviation receptors.

Negative

15.11. A moderate adverse effect from glint and glare is predicted for 13 dwellings (if a fixed mounting system is implemented) or 14 dwellings (if a tracking mounting system is implemented) across the Scheme. For the remaining dwelling receptors assessed in the 1km study area, effects are predicted to be lower.

15.12. A moderate adverse effect is predicted for a 2.2km section of Kirton Road – B1205 – (if a tracking mounting system is implemented). For the remaining road receptors assessed in the 1km study area, effects are predicted to be lower.

15.13. A moderate adverse effect is predicted towards train driver receptors (for both types of mounting system). For the remaining railway receptors assessed in the 500m study area, effects are predicted to be lower.

15.14. Once mitigation is implemented, overall impacts are expected to be minor/negligible for all receptors predicted to experience moderate adverse effects.

15.15. The cumulative glint and glare effect of West Burton Solar Project, Gate Burton Energy Park and Tillbridge Solar is not predicted to result in a significant impact due to the presence of significant mitigating factors. Therefore, cumulative effects are possible, however, the impact is predicted to be minor/negligible Adverse.

15.16. Additionally, 32 dwellings will have some visibility of both Cottam 3a and Cottam 3b and some road receptors will also have some visibility of both these sites, resulting in the potential for inter-related effects. However, the existing and proposed screening is likely to significantly reduce the visibility of both sites and therefore overall minor/negligible adverse impacts are predicted.

Cumulative

15.17. Shared receptors are either unlikely to concurrently have visibility of multiple areas (Cottam, Gate Burton Energy Park and West Burton 1) or, if visibility is possible, (Cottam 1 and 2 and Tillbridge Solar) no significant impact is predicted due to the presence of significant mitigating factors. Therefore, cumulative effects are possible however the impact is predicted to be Minor/Negligible Adverse.

Requirements

Requirement 14 – Operational environmental management plan

15.18. Requirement 14 – Operational environmental management plan: Before the date of final commissioning of the authorised development, an operational environmental management plan (which must substantially accord with the outline operational environmental management plan) must be submitted to and approved by the relevant planning authority. The operational environmental management plan must be implemented as approved.

15.19. Where Glint and Glare cannot be mitigated through panel backtracking tilt (tracking panels) and would require instant screening, a temporary 3m wooden solid hoarding may be required until adjacent planting has matured.

16. Ground Conditions and Contamination

Summary

16.1. The list below outlines the main points arising from the review of the Ground Conditions and Contamination chapter of the Environmental Statement (Doc. Ref. EN010133/APP/C6.2.11) for the Cottam Solar Project:

- [GC1] The construction period could result in of potential contaminant linkages from contaminated soils to human receptors, controlled waters and to the built environment.

Policy Context

National Policy

16.2. Section 5.15.6 of the NPS EN-1 states that the SoS *'should satisfy itself that a proposal has regard to the River Basin Management Plans and meets the requirements of the Water Framework Directive (including Article 4.7) and its daughter directives, including those on priority substances and groundwater'*.

Local Policy

16.3. Policy S56: Development on Land Affected by Contamination states that where proposals are known to be or has the potential to be affected by contamination, a preliminary risk assessment should be undertaken by the developer and submitted to the relevant Central Lincolnshire Authority as the first stage in assessing the risk of contamination. Proposals will only be permitted if layout and drainage have taken adequate account of ground conditions, contamination and gas risks arising from previous uses and any proposed sustainable land remediation.

Key Impacts

Construction, Operation and Decommissioning

16.4. As set out in Volume 1, Chapter 11: Ground Conditions and Contamination (Doc. Ref. EN010133/APP/C6.2.11), it is considered that the effects during construction and decommissioning are similar in both their sensitivity and magnitude. Furthermore, ground conditions are unlikely to be disturbed during the operational phase, with the exception of minor maintenance works. Maintenance works would utilise the same mitigation measures for that of the construction and decommissioning. As such, the impacts below relate to all three phases of the Scheme.

Positive

16.5. There are no positive impacts identified.

Neutral

16.6. There are no neutral impacts identified.

Negative

16.7. The ES identifies the risk of potential contaminant linkages from contaminated soils to human receptors (construction workers, adjacent site users or residents, and future site users), controlled waters (underlying aquifers and surface waters) and to the built environment. The ES identifies that there are a number of surface water features both on and adjacent to the Scheme, however, limited potential sources of contamination have been identified across the mainly agricultural land use.

16.8. Small areas of potentially infilled ponds/Made Ground have been identified across the Scheme, however, given the small scale of these features and the age of any infill material, the potential for gas generation is low. Furthermore, the potential for hazardous ground gases to accumulate within confined spaces is considered very low. In addition, no buildings are proposed in the vicinity of potentially infilled ponds/pits across the Sites, breaking the contaminant linkage to the built environment.

16.9. During construction, operation and decommissioning, standard industry best practice measures would be adopted to avoid and reduce the risk to ground conditions. The Construction Environmental Management Plan (CEMP) [EN010133/APP/C7.16] will clearly set out best practice to ensure any environmental impacts are as limited as possible. With embedded mitigation and the implementation of well-established good industry practices for managing contaminated land which will be incorporated into the CEMP, it is considered that the potential effects of contamination or risk of contamination will be reduced to moderate/minor and would not be significant.

Cumulative

16.10. Notable substantial projects in close proximity to the Scheme are: West Burton Solar Project; Gate Burton Energy Park; and Tillbridge Solar.

16.11. Given modern methods of construction and the low sensitivity end use, the cumulative effects to human health or controlled waters are considered to be negligible with the implementation of embedded mitigation measures such as the CEMP which would be appropriate for all development projects. There are currently two scenarios for the construction of the Shared Cable Corridor between the proposed solar farm Schemes a' however, the effect on ground conditions for both scenarios is considered a negligible alteration from the baseline.

Requirements

Requirement 13 – Construction environmental management plan

16.12. Under this requirement, no part of the authorised development may commence until a construction environmental management plan (which must substantially accord with the outline construction environmental management plan) has been submitted to and approved by the relevant planning authority. All construction works associated with the authorised development must be carried out in accordance with the approved construction environmental management plan.

16.13. Ground investigation works will be undertaken prior to commencing construction works. Results would be reviewed by the appointed contractor.

Requirement 14 – Operational environmental management plan

16.14. Requirement 14 – Operational environmental management plan: Before the date of final commissioning of the authorised development, an operational environmental management plan (which must substantially accord with the outline operational environmental management plan) must be submitted to and approved by the relevant planning authority. The operational environmental management plan must be implemented as approved.

16.15. The design of the Scheme has included measures to avoid and minimise the risk of pollution to the ground and water during its operation.

Requirement 19 – Soils management

16.16. This requirement stipulates that no part of the authorised development may commence until a soils resource management plan (substantially in accordance with the outline soils resource management plan) for that part has been submitted to and approved by the relevant planning authority. The soils resource management plan must be implemented as approved.

Requirement 21 – Decommissioning and restoration

16.17. This requirement provides that within 12 months (or such longer period as agreed with the relevant planning authority) of the date the undertaker decides to decommission any part of the authorised development, the undertaker must submit to the relevant planning authority for its approval a decommissioning environmental management plan for that part which substantially accords with the decommissioning statement. No decommissioning works must be carried out until the relevant planning authority has approved the plan submitted in relation to such works. The plan submitted must be implemented as approved. This requirement is without prejudice to any other consents or permissions which may be required to decommission any part of the authorised development.

17. Hydrology, Flood Risk and Drainage

Summary

17.1. The list below outlines the main points arising from the review of the Hydrology, Flood Risk and Drainage chapter of the Environmental Statement (Doc. Ref. EN010133/ APP/C6.2.10) for the Cottam Solar Project:

- [HFD1] There are several impacts on the water environment as a result of the Scheme. This includes increased flood risk, pollution from surface water runoff, increased water volume discharge and inappropriate wastewater disposal, among others.

Policy Context

National Policy

17.2. Section 5.15 of the National Policy Statement for Energy (NPS) (EN-1) focuses on water quality and resources. In the decision making process, the SoS should note that all activities that discharge to the water environment are subject to pollution control. Moreover, the SoS will '*generally need to give impacts on the water environment more weight where a project would have an adverse effect on the achievement of the environmental objectives established under the Water Framework Directive*'.

17.3. NPS [EN-1] also states that the SoS '*should consider whether appropriate requirements should be attached to any development consent and/or planning obligations entered into to mitigate adverse effects on the water environment*'.

Local Policy

17.4. The Central Lincolnshire Local Plan policies which are relevant to the scheme are set out below.

17.5. Policy S21: Flood Risk and Water Resources requires all proposals that are likely to impact on surface or ground water should consider the requirements of the Water Framework Directive. The development should demonstrate:

- That water is available to support the development proposed.
- The surface water hierarchy has been followed.
- No surface water connections are made to the foul system.
- The development contributes positively to the water environment and its ecology where possible and does not adversely affect surface and ground water quality in line with the requirements of the Water Framework Directive.
- Proposals with the potential to pose a risk to groundwater resources are not located in sensitive locations to meet the requirements of the Water Framework Directive.
- Relevant site investigations, risk assessments and necessary mitigation measures for source protection zones around boreholes, wells, springs and water courses have been agreed with the relevant bodies.

17.6. Policy S59: Green and Blue Infrastructure Network states that proposals that cause loss or harm to the green and blue infrastructure network will not be supported unless the need for and benefits of the development demonstrably outweigh any adverse impacts. Where adverse impacts on green infrastructure are unavoidable, development will only be supported if suitable mitigation measures for the network are provided.

Key Impacts

Construction & Decommissioning

17.7. The potential likely significant effects of the Scheme during decommissioning are likely to be the same or no worse than (i.e. a worst case scenario basis) as those encountered during the

construction phase. Therefore, those effects considered for construction below are similarly expected during the decommissioning phase.

Positive

17.8. There are no positive impacts.

Neutral

17.9. There are no neutral impacts.

Negative

17.10. The sensitivity of construction workers and equipment to mud and debris blockages is considered to be Medium. The potential for mud and debris to block drainage networks is considered to have an effect of Low Adverse magnitude on flooding to the Site itself and surrounding area which would result in flood risk to construction workers and equipment at the Site. The effect is therefore considered to be Moderate Adverse.

17.11. Temporary increase in impermeable area during construction / decommissioning has the potential to increase flooding both on and off site.

17.12. The effects would be temporary and short term. The sensitivity of construction workers and equipment is considered to be Medium with the temporary effects considered to have an effect of Medium Adverse magnitude to people working within - and property at - the Site as it could occur at a time of high flood risk (e.g. during a large storm event). The significance of effect is Moderate Adverse.

17.13. Construction of access tracks and movement of construction / decommissioning traffic, in the absence of construction good practice, can lead to compaction of the soil. The effects would be temporary and short term. The sensitivity of construction workers and equipment is considered to be Medium with the temporary effects considered to have an effect of Medium Adverse magnitude to people working within - and property at - the Site as it could occur at a time of high flood risk (e.g. during a large storm event). The significance of effect is Moderate Adverse.

17.14. There are a number of activities which have the potential to negatively affect the local water environment. The sensitivity of surface water and groundwater bodies to silt contamination is considered to be Medium. Without mitigation, potential effects are considered of a Medium magnitude. The significance of the effect is Moderate Adverse.

17.15. Fuel, hydraulic fluids, solvents, grouts, paints and detergents and other potentially polluting substances will be stored and / or used on the Site. Leaks and spillages of these substances could pollute groundwater bodies through infiltration as well as the surface watercourses within the Site and those nearby if their use is not carefully controlled and spillages enter existing flow pathways. The sensitivity of surface water and groundwater bodies to spillages, leakages and pollutants is considered to be Medium. Without mitigation measures spillages of chemicals/fuel stored and/or used on the Site could cause short term, temporary effects of a Medium magnitude on the local watercourses.

17.16. The sensitivity of surface water to inappropriate wastewater disposal from welfare facilities is considered to be Medium. Construction / Decommissioning foul water will not be discharged into a watercourse under any circumstances and therefore the magnitude of impact and significance of this effect is considered to be Negligible.

17.17. Following implementation of the proposed mitigation the residual effect is considered to be Negligible for all negative impacts.

Operational

Positive

17.18. There are no positive impacts.

Neutral

17.19. There are no neutral impacts.

Negative

17.20. Given the nature of the Scheme, the increase in permanent impermeable area on the Site will be negligible, however equipment such as the proposed substations and energy storage areas will generate increased surface water runoff when compared to the current use of the Site. This could potentially increase localised pluvial flooding on the Site, as well as increase flood risk to people and property in the immediate surrounding area and downstream. The sensitivity of people and property is considered Medium. Whilst the effects would be temporary and short term, this is considered to have an effect of Medium Adverse magnitude to people and property as it could occur at time of high flood risk (e.g. during a large storm event). The significance of effect is Major Adverse.

17.21. An increase in the volume of water discharged to local watercourses has the potential to increase the flood risk to areas downstream of the Scheme. The sensitivity of people and property is considered Medium. Whilst the effects would be temporary and short term, this is considered to have an effect of Medium Adverse magnitude to people and property (considered to be up to very high importance) occurring at time of high flood risk (e.g. during a large storm event) due to the potential risks and hazard (loss of life) and the potential economic damages. Therefore the significance of effect is Major Adverse.

17.22. Urban runoff from the Site, along with the associated infrastructure, could contain diffuse urban pollutants such as hydrocarbons, heavy metals, and nutrients as well as debris and silt which could ultimately be discharged to the nearby watercourses via surface water runoff or infiltrate to ground. Without mitigation this could have a moderate adverse effect on water quality.

17.23. Given the nature of the Scheme there is a potential risk of fire which may negatively effect upon the local water environment. Runoff from the Site, along with the associated infrastructure, following a fire could contain diffuse urban pollutants such as hydrocarbons, heavy metals, as well as debris and silt which could ultimately be discharged to the nearby watercourses via surface water runoff or infiltrate to ground. Without mitigation this could have a moderate adverse effect on water quality.

17.24. Traffic on existing roads to and from the Site will increase albeit negligibly as a result of the Scheme. Any increase in traffic flows could lead to the introduction of new sources (or changed discharges) of highway runoff into receiving watercourses. Surface water runoff from roads can contain pollutants such as hydrocarbons, heavy metals and inert particulates which can cause chronic pollution of the water environment if allowed to enter watercourses without the appropriate treatment.

17.25. Spillages of pollutants (e.g. oil) on highways can be transported to watercourses via runoff, where they could impact upon ecological life, or infiltrate to ground. The receptors at risk are surface watercourses and groundwater bodies which are considered to be of Medium Sensitivity. Without mitigation the increase in highway spillage risk is considered to have an effect of a Low Adverse magnitude. The significance of effect is Minor Adverse.

17.26. Following implementation of the proposed mitigation the residual effect is considered to be Negligible for all negative impacts.

Requirements

Requirement 11 – Surface and foul water drainage

17.27. This requirement stipulates that no part of the authorised development may commence until the details of the surface water drainage and (if any) foul water drainage system (substantially in accordance with the outline drainage strategy) for that part has been submitted to and approved by the relevant planning authority. The approved scheme must be implemented.

Requirement 13 – Construction environmental management plan

17.28. Under this requirement, no part of the authorised development may commence until a construction environmental management plan (which must substantially accord with the outline construction environmental management plan) has been submitted to and approved by the relevant planning authority. All construction works associated with the authorised development must be carried out in accordance with the approved construction environmental management plan.

17.29. Temporary drainage will be monitored throughout construction. Specific details will be confirmed in the CEMP. A Water Management Plan (which will form part of a detailed CEMP) will include details of pre, during and post-construction water quality monitoring. This will be based on a combination of visual observations and reviews of the Environment Agency's automatic water quality monitoring network.

18. Air Quality

Summary

18.1. The list below outlines the main points arising from the review of the Air Quality chapter of the Environmental Statement (Doc. Ref. EN010133/APP/C6.2.17) for the Cottam Solar Project:

- [AQ1] The main risk to air quality will arise during construction of the Scheme on its own. The impact will the multiplied on a cumulative level in the event the other solar schemes were granted development consent.

Policy Context

National Policy

18.2. NPS [EN-1] states that the SoS '*should generally give air quality considerations substantial weight where a project would lead to a deterioration in air quality in an area or leads to a new area where air quality breaches any national air quality limits*'.

18.3. In all cases the IPC must take account of any relevant statutory air quality limits.

18.4. The UK Air Quality Strategy (AQS) identifies nine ambient air pollutants that have the potential to cause harm to human health and two for the protection of vegetation and ecosystems. The AQS defines objectives for these pollutants that aim to reduce the impacts of these pollutants to negligible levels. The objectives are not mandatory but rather targets that local authorities should try to achieve.

Local Policy

18.5. Policy S14: Renewable Energy states that whilst renewable energy scheme will be supported, the impacts of the development are deemed acceptable on the amenity of sensitive neighbouring uses by virtue of matters such as air quality.

18.6. Policy S53: Design and Amenity requires that all development will not result in adverse noise and vibration taking into account surrounding uses nor result in adverse impacts upon air quality from odour, fumes, smoke, dust and other sources.

Key Impacts

Construction and Decommissioning

Positive

18.7. There are no positive impacts from air quality identified during construction or decommissioning.

Neutral

18.8. There are no neutral impacts from air quality identified during construction or decommissioning.

Negative

18.9. Potential impacts during construction and decommissioning include dust and particulate matter emissions from site activities, such as demolitions, earthworks (particularly during dry months), construction, vehicle movements, or from construction materials.

18.10. The main potential effects of particulates/dust are:

- Visual – dust plume, reduced visibility, coating and soiling of surfaces leading to annoyance, loss of amenity, the need to clean surfaces;
- Physical and/or chemical contamination and corrosion of artefacts;
- Coating of vegetation and soil contamination; and,
- Health impacts due to inhalation, e.g. asthma or irritation of the eyes.

18.11. All dust effects are considered to be direct, temporary, short-term and reversible in nature. Following the implementation of site-specific mitigation measures, included within the Outline CEMP, the significance of the effects from dust and emissions is considered to be negligible and not significant in EIA terms.

Operational

Positive

18.12. There are no positive impacts from air quality identified during operation.

Neutral

18.13. There are no neutral impacts from air quality identified during operation.

Negative

18.14. There is a potential fire risk associated with certain types of batteries such as lithium ion, which could result in smoke being blown downwind to nearby human and ecological receptors. Whilst there is low risk of adverse effects at the closest receptors, in the case of a fire at the proposed development, good practice safety measures will be implemented. Following the implementation of these measures during an occurrence of fire incident, the effects are determined to be negligible which is not significant in EIA terms.

Cumulative

18.15. The Scheme does not include any fixed plant which may give rise to industrial emissions, such as Combined Heat and Power (CHP) or boilers, therefore cumulative effects from industrial emission impacts will be not assessed.

18.16. The cumulative traffic air quality effects has been re-assessed by considering other NSIP projects in this locality for similar developments along with planning applications for the same. It is noted that there are a number of other NSIPs in this locality that are at a similar stage to this application; these have not yet attained permission but will be considered within the heading of cumulative impacts.

18.17. The anticipated, worst-case, vehicle movements associated with the Scheme, on any single road during the construction phase are forecast to be approximately 115 HGV AAWT movements, and 466 car and LGV AAWT movements. Following conversion from AAWT to AADT for the purposes of air quality assessment criteria consideration, the worst-case flows are anticipated to be 99 HGV movements, and 399 car and LGV movements. Additionally, it should be noted that these numbers do not account for further dispersion of vehicles along different sections of the A15. It can be assumed that these vehicle movements would be split, with some travelling to/from the north and other to/from the south. As such, it is anticipated that the cumulative vehicle numbers would not exceed the 'Indicative criteria for requiring an air quality assessment' detailed within IAQM Guidance on 'Land-use planning & development control: Planning for air quality', January 2017 and, therefore, air quality modelling for cumulative traffic assessment will be not required.

Requirements

Requirement 13 – Construction environmental management plan

18.18. Under this requirement, no part of the authorised development may commence until a construction environmental management plan (which must substantially accord with the outline construction environmental management plan) has been submitted to and approved by the relevant planning authority. All construction works associated with the authorised development must be carried out in accordance with the approved construction environmental management plan.

18.19. Measures in the CEMP will include the implementation of inspection procedures at the Order limits to periodically visually assess any dust and air pollution which may be generated; inspection of maintenance schedules for construction vehicles, plant and machinery; and inspection and recording procedures relating to the level of traffic movements, use and condition of haul routes.

Requirement 21 – Decommissioning and restoration

18.20. This requirement provides that within 12 months (or such longer period as agreed with the relevant planning authority) of the date the undertaker decides to decommission any part of the authorised development, the undertaker must submit to the relevant planning authority for its approval a decommissioning environmental management plan for that part which substantially accords with the decommissioning statement. No decommissioning works must be carried out until the relevant planning authority has approved the plan submitted in relation to such works. The plan submitted must be implemented as approved. This requirement is without prejudice to any other consents or permissions which may be required to decommission any part of the authorised development.

18.21. A dust management plan may be required as part of the DEMP and would detail any dust monitoring required prior to and during decommissioning, including any relevant baseline dust monitoring to be undertaken before activities commence. Records will be kept of all dust and air quality complaints, cause(s) will be identified and appropriate measures to reduce emissions will be taken in a timely manner. A further record will be kept of the measures taken.

19. Waste

Summary

19.1. The list below outlines the main points arising from the review of the Waste chapter of the Environmental Statement (Doc. Ref. EN010133/APP/C6.2.20) for the Cottam Solar Project:

- [W1] The Scheme will generate substantial quantities of both construction materials and wastewater. Employee activity will generate commercial, food and sewage waste.

Policy Context

National Policy

19.2. Section 5.14 of the NPS [EN-1] requires the SoS to take into account the extent to which the applicant has proposed an effective system for managing hazardous and non-hazardous waste arising from the construction, operation and decommissioning of the proposed development. The SoS should be satisfied that:

- Any such waste will be properly managed, both on-site and off-site.
- The waste from the proposed facility can be dealt with appropriately by the waste infrastructure which is, or is likely to be, available.
- Adequate steps have been taken to minimise the volume of waste arisings, and of the volume of waste arisings sent to disposal, except where that is the best overall environmental outcome.

19.3. Furthermore, the NPS [EN-1] should ensure that appropriate measures for waste management are applied through the use of obligations and requirements.

Local Policy

19.4. West Lindsey do not have any specific policies relating exclusively to waste management. Lincolnshire County Council is responsible for minerals and waste planning in the County. The Lincolnshire Minerals and Waste Local Plan is formed of two parts: the Core Strategy and Development Management Policies and the Site Locations.

- The Core Strategy and Development Management Policies outlines the principles for the future winning and working of minerals and the form of waste management. It also provides the criteria under which we consider minerals and waste development applications.
- Site Locations includes specific proposals and policies for the provision of land for mineral and waste.

19.5. Notwithstanding the above, West Lindsey do have policies in the Central Lincolnshire Local Plan that relate to the minimisation and management of waste.

19.6. Policy S10: Supporting a Circular Economy states that a key principle of a circular economy is the design out of waste and pollution. The principle requires businesses and organisations to rethink their supply chain and identify ways that they can avoid creating waste and pollution through their operations The policy also aims to support proposals which incorporate sustainable waste management onsite.

19.7. Policy S11: Embodied Carbon states that assessing the embodied carbon of a project can contribute to other sustainability targets and priorities beside carbon. For example, use of recycled content, recyclability of building materials, and reduced waste materials to landfill can all result from a focus on reducing embodied carbon and also contribute to waste reduction targets.

19.8. Policy S20: Resilient and Adaptable Design sets out that adaptable building design avoids, or at least minimises, waste, reduces the use of materials, and reduces overall emissions from the demolition and redevelopment of buildings that are no longer fit for purpose or incapable of being easily changed.

Key Impacts

Construction

Positive

19.9. There are no positive impacts identified during construction.

Neutral

19.10. There are no neutral impacts identified during construction.

Negative

19.11. Construction activities associated with the Scheme are anticipated to result in waste generation, including construction materials and wastewater. Employee activity will generate commercial, food and sewage waste. The total estimated construction, demolition and excavation (CD&E) waste is 77,400-78,100 tonnes over the 24-month construction period (38,700-39,100 tonnes per annum) which is considered a minor magnitude increase for the Local Impact Area.

19.12. The consequent environmental effects from a temporary, medium term, minor magnitude uplift in CD&E waste are:

- A neutral or slight adverse effect on recycling, reuse, and waste treatment handling (which is not considered significant in EIA terms).
- A slight adverse effect on landfill waste handling (which is not considered significant in EIA terms).

Operational

Positive

19.13. There are no positive impacts identified during operation.

Neutral

19.14. There are no neutral impacts identified during operation.

Negative

19.15. It is anticipated that waste arising during operation will be minimal and will predominantly be related to the removal of expired or broken equipment that cannot be repaired, and packing material required for replacement material. Waste electrical or electronic equipment (WEEE) arising from the operation and maintenance of the Scheme is anticipated to be limited to worn or broken photovoltaic panels of a negligible quantity. The total estimated CD&E waste to be generated from the Scheme per annum during operation is 190-191 tonnes. Assuming that waste is handled proportionally between Lincolnshire and Nottinghamshire, this constitutes a negligible magnitude increase in CD&E waste handling. The resulting impacts are:

- A neutral effect on recycling, reuse, and waste treatment handling (which is not considered significant in EIA terms).
- A neutral or slight adverse effect on landfill waste handling, as a result of its future very high sensitivity (which is not considered significant in EIA terms).

Decommissioning

Positive

19.16. There are no positive impacts identified during decommissioning.

Neutral

19.17. There are no neutral impacts identified during decommissioning.

Negative

19.18. The Scheme is anticipated to generate substantive WEEE through decommissioning, including photovoltaic panels, batteries, and substation equipment, as well as other smaller quantities of WEEE from supporting electrical infrastructure. The total WEEE generated from the Scheme's decommissioning is 77,000-85,000 tonnes, of which 7,000-14,000 tonnes is known to be considered as hazardous (batteries). Waste handling facilities for landfill waste handling in Nottinghamshire are likely to see a significant adverse effect during the decommissioning of the Scheme and cumulative decommissioning phase as a result of the lack of landfill capacity from the year 2030. Mitigation is expected to reduce the significance of impact to a slight or moderate adverse effect, which is not significant in EIA terms.

Cumulative

19.19. For the purpose of assessing waste impacts, the Gate Burton, West Burton and Tillbridge solar projects have been identified. Cumulative waste streams have sought to identify anticipated waste generated across all identified generating stations and their associated cable connections to the National Grid.

Positive

19.20. There are no positive impacts.

Neutral

19.21. There are no neutral impacts.

Negative

19.22. The total estimated cumulative construction, demolition and excavation (CD&E) waste to be generated from the Scheme construction is 271,000 tonnes over the combined construction period, estimated to be the four years from 2024-2028. For this cumulative assessment, waste streams are assumed to be consistent across the four years, and as such the waste generated per annum (67,700 tonnes) equates to an uplift in CD&E waste of 3.2% from the combined estimated CD&E waste for Lincolnshire and Nottinghamshire (2024 base year). This is approximately 1.7 times greater than the individual impact of the Cottam Solar Project. Assuming that waste is handled proportionally between Lincolnshire and Nottinghamshire, the cumulative impacts do not change the level of magnitude of the impacts, and thus do not change the significance of the effects from the assessment of Cottam Solar Project in isolation. As such, a moderate or large adverse effect (which is significant in EIA terms) is identified on landfill waste handling in Nottinghamshire, due to the very high sensitivity of the receptor.

19.23. Waste electrical or electronic equipment (WEEE) arising from the operation and maintenance of the cumulatively assessed projects is anticipated to be limited to worn or broken photovoltaic panels. These are not likely more than negligible quantities of hazardous materials, and as such, it is anticipated that there will be a long-term cumulative negligible magnitude uplift to hazardous waste in the Local Impact Area will have the following effects. As such, this does not increase the level of significance of the effects compared to those assessed for the Scheme in isolation.

19.24. The level of waste assumed to be generated from decommissioning activities associated with the cumulative projects are anticipated to be 347% more than would be generated for CD&E of the quantity estimated for Cottam Solar Project alone.

Requirements

Requirement 13 – Construction environmental management plan

19.25. Under this requirement, no part of the authorised development may commence until a construction environmental management plan (which must substantially accord with the outline construction environmental management plan) has been submitted to and approved by the relevant planning authority. All construction works associated with the authorised development must be carried out in accordance with the approved construction environmental management plan.

19.26. The types, quantities and final destination of waste generated during the construction phase would be identified, measured and recorded through the CRMP. A register of all waste loads leaving the

Order limits would be maintained to provide a suitable audit trail for compliance purposes and to facilitate monitoring and reporting of waste types, quantities and management methods.

Requirement 14 – Operational environmental management plan

19.27. Requirement 14 – Operational environmental management plan: Before the date of final commissioning of the authorised development, an operational environmental management plan (which must substantially accord with the outline operational environmental management plan) must be submitted to and approved by the relevant planning authority. The operational environmental management plan must be implemented as approved.

19.28. A register of waste loads leaving the Order limits would be maintained to provide a suitable audit trail for compliance purposes and to facilitate monitoring and reporting of waste types, quantities, and management methods.

Requirement 21 – Decommissioning and restoration

19.29. This requirement provides that within 12 months (or such longer period as agreed with the relevant planning authority) of the date the undertaker decides to decommission any part of the authorised development, the undertaker must submit to the relevant planning authority for its approval a decommissioning environmental management plan for that part which substantially accords with the decommissioning statement. No decommissioning works must be carried out until the relevant planning authority has approved the plan submitted in relation to such works. The plan submitted must be implemented as approved. This requirement is without prejudice to any other consents or permissions which may be required to decommission any part of the authorised development.

19.30. A Decommissioning Resource Management Plan (DRMP) setting out how measures to manage the disposal of waste from the Order Limits may be required in accordance with relevant legislative and policy requirements at the time of decommissioning. The separation of the main waste streams on-site, prior to transport to approved, licensed third party waste facilities, including Waste Electrical and Electronic Equipment (WEEE) reprocessors, for recycling or disposal will take place.

20. Minerals

Summary

20.1. The list below outlines the main points arising from the review of the Minerals chapter of the Environmental Statement for the Cottam Solar Project (Doc. Ref. EN-010133/APP/C6.2.12):

- [M1] The proposed Cable Route Corridor has the potential to result in operational issues for future mineral operations and might restrict the efficient exploitation of the resource.

Policy Context

National Policy

20.2. Section 5.10.9 states that '*Applicants should safeguard any mineral resources on the proposed site as far as possible, taking into account the long-term potential of the land use after any future decommissioning has taken place*'.

20.3. Furthermore, paragraph 5.10.22 requires the SoS to ensure that appropriate mitigation measures have been put in place to safeguard mineral resources for proposed developments which have an impact on a Mineral Safeguarding Area (MSA).

Local Policy

20.4. Similar to waste, West Lindsey do not have any specific policies relating exclusively to minerals planning. Lincolnshire County Council is responsible for minerals and waste planning in the County. The Lincolnshire Minerals and Waste Local Plan is formed of two parts: the Core Strategy and Development Management Policies and the Site Locations.

- The Core Strategy and Development Management Policies outlines the principles for the future winning and working of minerals and the form of waste management. It also provides the criteria under which we consider minerals and waste development applications.
- Site Locations includes specific proposals and policies for the provision of land for mineral and waste.

Key Impacts

20.5. The Scheme is partially within a Mineral Safeguarding Area (MSA) for sand and gravel. The Scheme has three potential impacts for mineral resources and supply. Depending upon the level of disturbance the Scheme has the potential:

- To disturb a mineral deposit to the extent the deposit becomes unviable to exploit;
- That the presence of the Scheme imposes a constraint on mineral extraction in the local vicinity by physically preventing its exploitation; and
- That the Scheme would adversely affect the local mineral supply.

Construction, operation and decommissioning

Positive

20.6. None identified.

Neutral

20.7. In terms of potentially disturbing a mineral deposit to the extent it becomes unviable to exploit, in this case the only identified surface mineral the Scheme affects are sand and gravel deposits. On the basis that the Scheme does not require deep excavations and foundations are limited to galvanised steel poles driven into the ground, disturbance is limited to the surface layers rather than underlying deposits and the Scheme would not affect the long-term viability of working the identified sand and gravel resource.

20.8. There are no permitted or proposed mineral extraction sites within close proximity that might be affected by the Scheme. Current assessments report that there is no need for new sites to come forward during the plan period up to 2031. Furthermore, on the basis that the Scheme will be decommissioned at the end of its operational life, any minerals would not be permanently sterilised and would be available to exploit if required at a future date. Thus, there is not considered to be any conflict with the relevant mineral safeguarding policies and the Scheme would not constrain mineral extraction in the local vicinity.

20.1. The Scheme will be decommissioned at the end of its (approximately 40 year) operational life and all above ground structures will be removed and the land restored. Such measures will essentially restore the baseline condition for the identified mineral resources. Any minerals would not be permanently sterilised and would be available to exploit if required at a future date. Where infrastructure is left in the ground (such as cable ducts after decommissioning) these are not anticipated to present any significant constraint to future mineral extraction and would be removed as part of the removal of overburden or extraction of mineral with the same excavation equipment.

20.2. In view of the current policies of the Mineral Planning Authority, the current sand and gravel landbank and the extensive areas covered by the Area of Search, it seems highly unlikely that the sand and gravel reserve partially underlying the Scheme will need to be worked within the lifetime of the Scheme. Therefore the Scheme is not considered to have a significant impact on the potential sand and gravel supply in the County during the life of the Scheme.

20.3. In terms of petroleum exploration and development, it is not considered that the proposed Scheme would have any implications for existing or proposed exploration and eventual exploitation of oil and gas resources. Solar arrays and associated development are not considered to be sensitive adjoining land uses to an oil well. Whilst together the solar array Sites occupy a large area, they are not a single block of land and are dispersed across a large area thus there is still scope for exploratory drilling across the Petroleum Exploration and Development License area. The method of petrochemical extraction involves limited surface development that could be located outside the solar array Sites and still allow extraction of the mineral beneath those Sites.

Negative

20.4. The proposed Cable Route Corridor, particularly in the Trent Valley, however, does have the potential to result in operational issues for future mineral operations and might restrict the efficient exploitation of the resource. This impact has been mitigated wherever possible by cable routes following existing infrastructure corridors or edges of significant landscape features rather than directly crossing open fields. Such an approach avoids creating a further obstruction to the future exploitation of the mineral resource.

Cumulative

20.5. Notable substantial projects in close proximity to the Scheme that have the potential to impact on mineral resources are:

- Gate Burton Energy Park;
- West Burton Solar Project; and
- Tillbridge Solar.

Positive

20.6. None identified.

Neutral

20.7. In terms of the direct impact on the mineral reserves affected by the Scheme, there are no other plans or proposals for other developments that directly affect these deposits.

20.8. The Applicant has worked with West Burton Solar Project and with Gate Burton Energy Park to establish a Shared Cable Route Corridor to minimise the overall impact. Without this mitigation multiple cable routes across this safeguarded reserve would further bisect it adding further constraints to any future mineral working and whilst not actually physically sterilising any mineral deposit might make areas uneconomic to work.

20.9. The potential cumulative impact is considered small as these proposals only affect a relatively small area of an extensive area of search for the lifetime of each of these proposals. The cumulative impact of this Scheme, in combination with the West Burton Solar Project and Gate Burton Energy Park is not considered to have a significant adverse impact on the supply of sand and gravel within Lincolnshire.

20.10. The Tillbridge Solar scheme does not appear to affect any safeguarded mineral deposits. The site does appear to fall within the mineral consultation zone for 2 oil wells near Glentworth; these are site specific considerations and there are no cumulative impacts arising from this development.

Negative

20.11. The Cable Route Corridors linking the solar array Sites to the former Cottam Power Station site overlap with proposed cable corridors for Gate Burton Energy Park, and for a short distance, also with the cable corridor for the proposed West Burton Solar Project. Much of the overlap is within an area of safeguarded sand and gravel reserves associated within the Trent Valley.

20.12. Any other proposals for development that sterilise safeguarded mineral resources, particularly those also identified as Area of Search for sand and gravel in the Lincolnshire Minerals and Waste Local Plan, could have an impact on the supply of sand and gravel within Lincolnshire.

20.13. The West Burton Solar Project consists of a number of parcels of land, one of which lies to the west of the Sheffield to Lincoln Railway Line, south east of Marton and east of Brampton. This part of the West Burton Scheme does lie within the Area of Search for sand and gravel.

20.14. The Gate Burton Energy Park scheme extends west from Willingham by Stow to Gate Burton and Knaith in the west. The proposed extent of this development does mean that it also covers the same Area of Search for sand and gravel.

Requirements

20.15. There are no requirements related to minerals.

21. Other Environmental Matters

Summary

21.1. Chapter 21: Other Environmental Matters of the ES (Doc. Ref. EN010133/APP/C6.2.21) describes and assesses the potential effects of the Scheme on:

- Electromagnetic Fields;
- Telecommunications, Utilities and Television;
- Light Pollution;
- Human Health; and
- Major Accidents and Disasters.

Policy Context

National Policy

Electromagnetic Fields

21.2. Paragraph 2.10.5 of NPS EN-5 states that the *'National Radiological Protection Board (NRPB) (now part of HPA CRCE), published advice on limiting public exposure to electromagnetic fields. The advice recommended the adoption in the UK of the EMF exposure guidelines published by ICNIRP in 1998. These guidelines also form the basis of a 1999 EU Recommendation on public exposure and a Directive on occupational exposure. Resulting from these recommendations, Government policy is that exposure of the public should comply with the ICNIRP (1998) guidelines in terms of the EU Recommendation. The electricity industry has agreed to follow this policy'*.

Light Pollution

21.3. Paragraph 185(c) of the NPPF 2021 states that decisions should *'limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation'*.

Human Health

21.4. Section 4.13 of the NPS states that energy projects have the potential to have an impact on human health. The aspects of schemes which are most likely to have an impact on human health are subject to separate regulation (for example for air pollution) which will constitute effective mitigation of them, so that it is unlikely that health concerns will either constitute a reason to refused consents or require specific mitigation under the Planning Act 2008. However, the IPC will want to take account of health concerns when setting requirements relating to a range of impacts such as noise.

Major Accidents and Disasters

21.5. The EIA Regulations require consideration to be given to the risks of major accidents and disasters.

Local Policy

21.6. The 4th Lincolnshire Local Transport Plan (LTP4) covers the period 2013/14-2022/23. At the time of writing, this is in the process of being replaced by the 5th Local Transport Plan (LTP5). Theme 4 'Supporting safety, security and a healthy lifestyle' states that there is a need to reduce the impacts of air quality, noise and light pollution.

21.7. Policy S54 of the Central Lincolnshire Local Plan notifies applicants that the potential for achieving positive mental and physical health outcomes will be taken into account for all schemes. Where any potential adverse health impacts are identified, the applicant will be expected to demonstrate how these will be addressed and mitigated.

Key Impacts

Construction, operation and decommissioning

Positive

21.8. No positive impacts identified.

Neutral

21.9. The vulnerability of the Scheme to flooding has been mitigated through embedded design measures to avoid building critical infrastructure in areas where there is a greater than 1 in 1,000 annual probability of flood risk. Elsewhere on the Sites, where works are able to be built compatibly with flooding of up to a depth of 1m, the vulnerability of construction workers and equipment is mitigated through embedded measures through the Outline Construction Environmental Management Plan [EN010133/APP/C7.1]. These include the requirement for contractors to produce a Flood Risk Management Action Plan/Method Statement which will provide details of the response to an impending flood and include the following. These measured are to be secured through Requirement in the DCO.

21.10. The review of climate change resilience set out in ES Chapter 7: Climate Change [EN010133/APP/C6.2.7] identifies that the impacts of increased rainfall events, winter precipitation, and increased probability of extreme weather events on the Scheme's construction is anticipated to be medium to high magnitude. However, given the timescale of construction, it is not anticipated these events will be significantly more likely than the baseline, and as such, the anticipated impacts are not severe and are not significant. These impacts are likely to be of a greater (high) magnitude during operation and decommissioning as a result of future baseline conditions. That notwithstanding, the level of effect to the Scheme identified as not significant.

Negative

21.11. No negative impacts identified.

Cumulative

21.12. Cumulative effects have been assessed in relation to the interaction between the Scheme and three identified solar NSIPs in the vicinity. These are West Burton Solar Project, Gate Burton Energy Park, and Tillbridge Solar Park. Cumulative effects have been assessed in each of the supporting chapters to this human health assessment and are therefore summarised below.

Positive

21.13. The uplifts in employment and skills training and education opportunities are anticipated to have significant beneficial effects on human health and wellbeing as a result of improved measures of indices of multiple deprivation. The level of significance is not however anticipated to be increased by cumulative effects.

Neutral

21.14. The risk of fire from the BESS during construction and decommissioning is negligible due to the containerised construction of the storage units, thus reducing the risk of damage to battery cells which may cause fires. Furthermore, risks associated with damage to battery cells is likely to be isolated and so risk of larger fires is reduced.

Negative

21.15. Cumulative effects during construction on long distance recreation routes are anticipated to have a peak cumulative moderate adverse effect, specifically on the Trent Valley Way. This has a secondary impact on public health and wellbeing as a result of decreased desirability and use of a recreational walking route.

21.16. The residual cumulative effects on other human health receptors, such as access to primary healthcare, disability and long-term health, self-assessed health, and on access and use of outdoor recreation centres for adults and for youths are not anticipated to be significant.

Requirements

Requirement 13 – Construction environmental management plan

21.17. Under this requirement, no part of the authorised development may commence until a construction environmental management plan (which must substantially accord with the outline construction environmental management plan) has been submitted to and approved by the relevant planning authority. All construction works associated with the authorised development must be carried out in accordance with the approved construction environmental management plan.

21.18. The types, quantities and final destination of waste generated during the construction phase would be identified, measured and recorded through the CRMP. A register of all waste loads leaving the Order limits would be maintained to provide a suitable audit trail for compliance purposes and to facilitate monitoring and reporting of waste types, quantities and management methods.

Requirement 14 – Operational environmental management plan

21.19. Requirement 14 – Operational environmental management plan: Before the date of final commissioning of the authorised development, an operational environmental management plan (which must substantially accord with the outline operational environmental management plan) must be submitted to and approved by the relevant planning authority. The operational environmental management plan must be implemented as approved.

21.20. A register of waste loads leaving the Order limits would be maintained to provide a suitable audit trail for compliance purposes and to facilitate monitoring and reporting of waste types, quantities, and management methods.

Requirement 21 – Decommissioning and restoration

21.21. This requirement provides that within 12 months (or such longer period as agreed with the relevant planning authority) of the date the undertaker decides to decommission any part of the authorised development, the undertaker must submit to the relevant planning authority for its approval a decommissioning environmental management plan for that part which substantially accords with the decommissioning statement. No decommissioning works must be carried out until the relevant planning authority has approved the plan submitted in relation to such works. The plan submitted must be implemented as approved. This requirement is without prejudice to any other consents or permissions which may be required to decommission any part of the authorised development.

21.22. A Decommissioning Resource Management Plan (DRMP) setting out how measures to manage the disposal of waste from the Order Limits may be required in accordance with relevant legislative and policy requirements at the time of decommissioning. The separation of the main waste streams on-site, prior to transport to approved, licensed third party waste facilities, including Waste Electrical and Electronic Equipment (WEEE) reprocessors, for recycling or disposal will take place.

22. Cumulative Effects

Summary

22.1. [CE1] Unlike the ES for the Gate Burton scheme, which includes a 'Cumulative Effects and Interactions' chapter, there is not an individual cumulative effects chapter of the Cottam ES. Whilst it is noted that the cumulative effects are considered in each chapter, the presentation of the cumulative effects could have been made clearer by including an individual chapter.

22.2. [CE2] The key impact on cumulative effects would be from the proposed Gate Burton, Tillbridge and West Burton solar farms that are located within West Lindsey alongside the Scheme.

22.3. [CE3] There are several discrepancies between the Environmental Statements (ES) for Cottam and Gate Burton. This is particularly relevant to the cumulative effects assessments which state conflicting levels of impacts.

22.4. [CE4] The Cottam ES states that there will be beneficial or neutral cumulative landscape impacts during the operational phase of the developments. This is in conflict with Chapter 10: Landscape and Visual Amenity of the Gate Burton ES (Doc Ref. EN010131/APP/3.1) which assesses adverse cumulative effects states:

> *'10.12.6 During operation, cumulative effects from the Scheme and Cottam Solar Project or Tillbridge Solar Farm are considered **Minor adverse**. Cumulative effects with West Burton Solar Project are **Moderate adverse** which is considered significant.*
>
> *10.12.7 West Burton Solar Project, Cottam Solar Project, Tillbridge Solar Farm and the Scheme has as a combined cumulative impact on landscape of **Moderate adverse**, which is considered significant. Given the proximity of the Scheme with these other solar projects, and the combined scale, the Applicant has worked in partnership to identify areas where projects can collaborate to manage environmental effects.'*

22.5. [CE5] The cumulative landscape impact assessed in the landscape and visual assessment in contradiction of the findings in other chapters of the ES. This includes the socio-economic chapter which recognises the '*a long-term impact on the landscape character of some tourism and recreation receptors that are reliant on the landscape context for their value, such as viewpoints, landmarks, and cultural heritage assets*'.

Policy Context

22.6. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA regs) (regulation. 21) require the decision maker, when deciding to make an order granting development consent, to reach a reasoned conclusion on the significant effects of the proposed development on the environment following an examination of the environmental information provided. The conclusion reached must be to up to date at the time that the decision is made. Schedule 4 of the EIA regs require a description of the likely significant effects of the proposed development on the environment, including cumulative effects. The policy requirements to consider cumulative impacts are set out in adopted National Policy Statement EN-1 (NPS EN-1). Paragraph 4.2.1 reiterates the requirements of the EIA regs set summarised above.

22.7. NPS EN-1 paragraph 4.2.5 states that: '*When considering cumulative effects, the ES should provide information on how the effects of the applicant's proposal would combine and interact with the effects of other development The current NPS EN-1 directs the decision maker to consider 'how the accumulation of, and interrelationship between, effects might affect the environment, economy or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place*'.

22.8. Paragraph 5.12.3 of Section 5.12 (Socioeconomics) identifies the potential cumulative impact of development proposals. It notes that if development consent were to be granted to for a number of projects within a region and these were developed in a similar timeframe, there could be some short-term negative effects, for example a potential shortage of construction workers to meet the needs of other industries and major projects within the region.

22.9. Draft NPS EN-1 notes that when 'considering any proposed development, in particular when weighting its adverse impacts and its benefits, the Secretary of State should take into account: [..]

its potential adverse impacts, including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce, mitigate or compensate for any adverse impacts. In this context, the Secretary of State should take into account environmental, social and economic benefits and adverse impacts, at national, regional and local levels'.

Key Impacts

22.10. WLDC has significant concerns regarding the potential cumulative impact of the Cottam Solar project with the Gate Burton, West Burton and Tillbridge NSIPs.

22.11. Whilst Cottam will be assessed on its own merits, the status of Gate Burton and West Burton as applications in examination and pre-examination (due to commence examination shortly) respectively results in a need to thoroughly examine the impacts of these NSIPs with each other. The Tillbridge scheme must also be considered in the decision making process.

22.12. Table 22-1 below provides a summary of the key cumulative impacts associated with Cottam and the other proposed solar schemes which are located with the boundary of WLDC.

Table 22-1 – Cumulative Impacts

Topic	Impact
Landscape and Visual	It has been assessed that there would be neutral impact on the following landscape receptors: Land use; Communications and Infrastructure; Settlements, Industry, Commerce and Leisure; Public Rights of Way and Access; Scheduled Monuments, Listed Buildings, Conservation Areas and Registered Parks and Gardens;
	It is assessed that there will be a beneficial effect with regards to the follow landscape receptors: Topography and watercourses; Nationally and Locally Designated Landscapes; and Ancient Woodlands and Natural Designations.
	The Landscape and Visual Amenity chapter states that it has identified 'at worst Minor adverse effects on landscape during construction for the following projects: West Burton Solar Project, Cottam Solar Project, Cottam Power Station demolition, and Stow Park Road Residential Development'.
	Furthermore, during the operational phase, it has been assessed that the cumulative effects from the Scheme and Cottam Solar Project or Tillbridge Solar Farm are considered Minor adverse. Cumulative effects with West Burton Solar Project are moderate adverse which is considered significant.
	The cumulative landscape assessment in the Gate in the Gate Burton West Burton Solar Project, Cottam Solar Project, Tillbridge Solar Farm and the Scheme has as a combined cumulative impact on landscape of moderate adverse, which is considered significant. Given the proximity of the Scheme with these other solar projects, and the combined scale, the Applicant has worked in partnership to identify areas where projects can collaborate to manage environmental effects.
Ecology and Nature Conservation	Several designated sites were located close to the Shared Cable Route Corridor, particularly Coates Wetland LWS, Trent Port Wetland LWS (which occur close to the proposed River Trent crossing point) and Cow Pasture Lane Drains LWS. It is proposed that these sites are protected through the use of Horizontal Directional Drilling. In which case, a simultaneous or sequential cable installation programme should not cause any cumulative impacts.
	An 18 month cable works programme for the simultaneous installation option would enable habitats removed/disturbed by the works to be reinstated in reasonable time, as assessed above in this Chapter. None of the habitats recorded within the field surveys were of such value as to mean they could not withstand some temporary loss from a working width, or that wider effects would be caused.
	A sequential programme over five years would be expected to give rise to a cumulative adverse effect, considering the need for the compounds, jointing bays, haul routes etc to remain in place for five years. Although, the trenching works could be completed and remediated as a priority given that cable pulling could be carried out at any time once the ducts are installed. This would minimise the number of hedgerow incursions which would need to remain in place, limiting them to haul route gaps only. Consequently, the sequential

	programme would have greatest impact on hedgerow habitat, followed by grasslands including semi-improved grassland and lowland floodplain grassland.
Transport and Access	Traffic flows associated with the cumulative schemes will only affect links in the study area that have a low sensitivity. These roads are less sensitive to change compared to the more local/rural roads within the network, which will not be affected by the cumulative schemes. The percentage change on these roads is low. It should also be noted that it is incredibly unlikely that a scenario will occur whereby all cumulative schemes are constructed at the same time.
	The cumulative effects on the local highway network surrounding the Grid Connection Route will also be low, as the cumulative Schemes will not use the same routes. It should be noted that sections of the Grid Connection Route for the Scheme will be shared with Gate Burton and West Burton, although the residual effects will not change as a result of this.
	Based on Gate Burton's ES, if the Cottam, Gate Burton, Tillbridge and West Burton solar farm proposals were to commence at similar times, a worst case scenario would result in approximately 160 HGV vehicles using the local road network per day if peak construction was to coincide with all four schemes.
	Any overlaps between the construction vehicle trips associated with the Scheme and other schemes are likely to be primarily confined to wider strategic routes. Other schemes are not likely to contribute to the effects on transport and access receptors (including the A156, Kexby Lane, Willingham Road, Marton Road, and the A1500 in Lincolnshire and Cottam Road, Headstead Bank, Broad Lane, Cow Pasture Lane and Town Street in Nottinghamshire)
Socio-Economic and Land Use	The combined effect of the construction of the cumulative developments is likely to bring considerable additional employment to the local economy.
	If all the schemes are to be realised at the same time, there will be considerable additional employment demand from some of the cumulative schemes. Most cumulative schemes, however, will not generate considerable operational employment due to their nature as infrastructure or utilities projects.
	In considering the significant workforce requirements for all the Schemes, particularly if all four proposed solar farms in West Lindsey were granted, there are concerns over whether there is a sufficient workforce nationally to meet demand. It can therefore be surmised that if the workforce and skills are divided between the projects, then the construction period for the schemes could go beyond the 24 months proposed in the ES.
Cultural Heritage	Cumulatively, there is a significant impact to the setting of a designated heritage asset is at the Thorpe medieval settlement Scheduled Monument (NHLE 1016978), this being due to the close proximity of elements of the Cottam 1 Site.
	There are also minor adverse effects on several designated and undesignated historic assets including scheduled monuments; listed buildings; registered parks and gardens; and views from the Lincoln Cliff. These are set out in the cultural heritage chapter.
	The proposed Cottam Solar Project and West Burton Solar Project will contribute to the impact identified in this assessment on the Grade I listed Church of St Mary at Stow (1146624) through additional development within its wider landscape setting.
Human Health and Wellbeing	There will be cumulative effects during construction on long distance recreation routes that are anticipated to have a peak cumulative moderate adverse effect, specifically on the Trent Valley Way. This has a secondary impact on public health and wellbeing as a result of decreased desirability and use of a recreational walking route.
	The construction of Cottam, Gate Burton and West Burton could create a peak of 1,886 workers, which could have implications on access to healthcare services. It must be noted that this does not take into account the approximate 500 FTE workforce required for Tillbridge. This has not been considered in the cumulative effects chapter.

Shared Grid Connection Corridor

22.13. Part of the Gate Burton Energy Park cable route and West Burton Solar Project cable route are proposed to be located within the cable route corridor for the Scheme's cable circuits (the Shared Cable Route Corridor). This is identified as Work No.6B on the Works Plans. The cumulative environmental effects of the simultaneous or sequential construction of these cable circuits have been assessed in this ES. This is in order to seek to minimise potential environmental effects and identify the benefits of combined construction activities.

22.14. The DCO Application will seek development consent for the Scheme's cable circuits only. The proposed West Burton DCO Application will seek development consent for its cable, and the proposed Gate Burton DCO Application will seek development consent for its cable. Part of the cable route corridors for all three projects are proximate to each other, however, it has not yet been determined exactly where each cable circuit will be micro-sited or the exact crossing point(s). For this reason, the Shared Cable Corridor shown as Work No. 6B on the Works Plans is wide enough to accommodate all three cable circuits. The exact location of the Scheme's cable circuits within the Shared Cable Corridor will be determined at the detailed design stage post DCO consent in collaboration with the promoters of the Gate Burton Energy Park and the West Burton Solar Project. Where appropriate and practicable to do so, the intention of the Applicant and the promoters of the Gate Burton Energy Park and the West Burton Solar Project is to coordinate the discharge of any pre-construction requirements relating to works in the Shared Cable Corridor. It is anticipated that there will be no significant cumulative operational effects, associated with the cables once they are constructed and the land re-instated, that need to be assessed in this ES. The construction and decommissioning phases have been assessed.

22.15. There are two cumulative scenarios have been considered for each environmental aspect:

i. The construction of all three projects' ducts and cables at the same time, within the same construction programme. The ES assumes an 18 months duration for this. In this scenario, the likely construction method would be for all three projects' ducts to be installed at the same time, but the cables would all then subsequently be 'pulled through' separately, at the appropriate time during the construction programme for each individual project. An assessment of all ducts dug and installed together in the early period of the 18 month construction period, and three lots of separate cable-pulling activities over the 18 month construction period has been considered. For cable duct construction assumed works for all three projects consist of haul road, compounds / laydown areas, bridge crossings (bailey bridges), horizontal drilling activities and associated laydown areas. For cable pulling the assessment has assumed the haul road, compounds / laydown areas have remained in situ; and that the additional works associated with the cable pulling is the construction of the joint bays and communications chambers.

ii. The installation of each projects' ducts and cables, sequentially over a 5 year period. Over this period, it is assumed that haul roads, laydown areas / compounds and bridges remain in situ for the 5 year period. This would represent a worst case scenario from an assessment perspective given the potential for on-going construction activities over this period.

Summary

22.16. The 18 month period for the installation of the cables for all the schemes is six months less than the 24-36 months predicted under the Gate Burton ES. This suggests there is limited understanding of the construction phases between the three projects.

22.17. The Applicant states that it is their intention of the Scheme to coordinate the discharge of any pre-construction requirements relating to works in the Shared Cable Corridor. This is not secured under the DCO and therefore there is no obligation for the Applicant to coordinate the discharge of requirements if it does not suit them.

22.18. The shared Grid Connection will also include Tillbridge; however, this is not included in the assessments in the ES.

Other Key Projects Under Development

22.19. There are several key developments that will have an interrelationship with the Gate Burton. The Applicant has identified some of the schemes in its ES.

22.20. The projects that the Councils consider of substantive relevance to cumulative impacts of the Scheme in Table 19-2.

Table 22-2 – Solar and Other Energy Developments in Proximity to the Development Site

Name	Location	Grid Connection Agreement	Comment
Gate Burton Energy Park	West Lindsey and Bassetlaw	Approx. 500	Application by Gate Burton Energy Park Limited (Low Carbon Group Limited). Shares same Grid Connection Corridor with the Cottam, Tillbridge and West Burton Scheme. Currently in examination phase.
West Burton Solar Project	West Lindsey and Bassetlaw	Approx. 500	Application by Cottam West Burton Solar Project Limited (Island Green Power). Currently in examination phase. Shares same Grid Connection Corridor with the Cottam, Tillbridge and Gate Burton Scheme.
Tillbridge Solar Project	West Lindsey and Bassetlaw	Approx. 500	Application by Tillbridge Solar Limited. Shares same Grid Connection Corridor with the Cottam, West Burton and Gate Burton Scheme. The application is expected to be submitted to the Planning Inspectorate Q4 2023. After receipt of the application, there will be 28 days for the Planning Inspectorate (PINS) to review the application and decide whether or not to accept it for examination. If the application is accepted, PINS will confirm the timescale within which people can register to become an Interested Party by making a Relevant Representation.

Major Energy Projects in the East Midlands

22.21. There are other major energy projects taking place around the region that would likely require some of the same skills and workforce needed for the construction of this project as set out in the table below. In its impact assessment of this project, the applicant has not considered the implications of these other projects, and the cumulative impact of the projects on the local and regional workforce availability for businesses in the area.

Table 22-3 – Energy NSIPs in the East Midlands listed by the Planning Inspectorate

Project	Developer	Stage
Oaklands Farm Solar Project	Oaklands Solar Farm Limited	Pre Application
Beacon Fen Energy Park	Beacon Fen Energy Park Limited	Pre Application
Springwell Energy Farm	Springwell Energy Farm Limited	Pre Application
Temple Oaks Renewable Energy Park	Ridge Clean Energy Limited	Pre Application
Outer Dowsing Offshore Wind (Generating Station)	Total Energies and Corio Generation	Pre Application
Triton Knoll Offshore Wind Farm	Triton Knoll Offshore Wind Farm Limited	Decided
Triton Knoll Electrical System	Triton Knoll Offshore Wind Farm Limited	Decided

23. Conclusion and Summary

Conclusion

23.1. The Cottam Solar Project will have multiple impacts on West Lindsey District Council (WLDC). This report has identified the positive, neutral and negative impacts of the Scheme that have been identified in the Environmental Statement (ES) submitted by the Applicant.

23.2. WLDC accept that, based on the information available at the time of the drafting of the ES, the Applicant has considered the cumulative effects of other proposed schemes in the West Lindsey area. This report has sought to highlight the scale of these cumulative impacts of the Scheme when considered in association with the other proposed solar schemes in the West Lindsey district. This includes Gate Burton, Tillbridge and West Burton.

23.3. There are clearly positive impacts of the Scheme, particularly from a climate change perspective; however, it is considered that there are negative impacts for the majority of the ES topics and the Scheme will have a detrimental impact on West Lindsey.

23.4. Notwithstanding the above, this LIR has identified points of clarification which must be addressed, this includes inconsistencies between the assessments in chapters within the ES and also with other schemes in the area.

23.5. The key topics that are considered to be of particular concern area set in the subheadings below and provides a brief description of the key impacts which will affect West Lindsey. WLDC will reserve providing their position on the Scheme and will provide it as part of the Written Representation.

Alternatives and Design Evolution

23.6. The Applicant has set out their approach to identifying alternative sites and the design approach that was taken during to production of the application.

23.7. The Applicant has used a 20km radius from the point of connection at the Cottam power station. This is more than double the size of the search area used by Gate Burton and is 33% larger than the search area used by West Burton.

23.8. It has been set out that a minimum of 40 hectares is required for a site to be economically viable. This site seems arbitrary and a similar site parameters were not applied to the Gate Burton scheme.

Landscape and Visual Impact Assessment

23.9. The Applicant has assessed the landscape impact on West Lindsey would be beneficia, including on a cumulative scale; however, within the Cultural Heritage chapter the Applicant recognises that the Scheme will '*have a long-term impact on the landscape character of some tourism and recreation receptors that are reliant on the landscape context for their value, such as viewpoints, landmarks, and cultural heritage assets*'. These two assessments appear to be in conflict.

23.10. Furthermore, the Gate Burton scheme has assessed a cumulative moderate adverse impact based on the same schemes. The design of the Scheme relies on a 'network of sites' which will blot the landscape for decades and does not follow a contiguous site area. This does not demonstrate the contiguous design which has been implemented on the Gate Burton scheme.

23.11. The conclusion provided on the impact of the Scheme being cumulative is therefore in conflict with the assessment undertaken by a similar scheme within West Lindsey.

Ecology and Biodiversity

23.12. During construction, the Scheme will result in the loss, degradation and fragmentation of habitats. It will also cause disturbance the flora and fauna of West Lindsey. There is also the potential that the Scheme would introduce invasive species.

23.13. Operational impacts of the Scheme could include light disturbance to bats and birds. There is also the potential that Battery and Energy Storage System (BESS) will generate noise attraction or disturbance.

23.14. Maintenance activities could also have an impact on ecological receptors.

Socio Economics, Tourism and Recreation

23.15. The Applicant recognises that there is a limited accommodation in the Local Impact Area. This will result in an oversubscription during the peak construction months meaning that there will not be enough temporary accommodation. This impact would be amplified if the cumulative schemes were to be constructed at the same time.

23.16. As set out above, the Applicant recognises that during the operational the Scheme will have a long-term impact on the landscape character of some tourism and recreation receptors that are reliant on the landscape context for their value, such as viewpoints, landmarks, and cultural heritage assets. This, along with construction impacts, will also mean reduced spending in the visitor and tourism economy.

23.17. There will also be a loss of agricultural jobs that are unlikely to return after nearly half a century.

Cultural Heritage

23.18. The Scheme will have an impact on several designated and undesignated heritage assets.

23.19. Although some of the affects are considered not significant, there a multiple slight adverse impacts which, when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.

Transport and Access

23.20. Traffic during the construction of the Scheme is a key concern. Whilst this Scheme would likely be acceptable given the contained nature of the site, it is the cumulative effects that would impact West Lindsey if the Cottam, Tillbridge and West Burton schemes where all to be in their construction periods at the same time.

23.21. The cumulative construction traffic routes are shown clearly at Appendix C and demonstrate the impact on the West Lindsey with the majority of the district affected.

Hydrology, Flood Risk and Drainage

23.22. There is a potential for several impacts from the Scheme where the cable corridor crosses the River Trent, Seymour Drain, Marton Drain and several unnamed watercourses. The ES states that Grid Connection Corridor will be constructed beneath the channels of the watercourses via HDD techniques. This therefore causes there to be a potential impact to the water quality of the watercourses.

Noise and Vibration

23.23. The Scheme will result in noise and vibration impacts which would be result of from construction activities and construction traffic. The cumulative impacts from construction could be compounded if the other solar schemes of Gate Burton, Tillbridge and West Burton were being constructed at the same time as the

Summary

23.24. Table 23-1 below provides a tabulated form of all the impacts by topic, including the cumulative impacts related with that topic.

Table 23-1 – Impacts Summary Table

Topic	Impact	Construction	Operation	Decommissioning	Cumulative Impacts
Landscape and Visual Impact Assessment	Positive	None	During the Operation Stage, there would be minor beneficial effects to topography and watercourses since there would be some change to the landscape as a result of the proposed mitigation measures. Similarly, there would be negligible beneficial impacts to Nationally and Locally Designated Landscapes for this same reason.	None	The ES states that there would be a noticeable, but minor, beneficial effect resulting from the cumulative implementation and maturation of landscape mitigation planting on the following landscape receptors: Topography and watercourses; Nationally and Locally Designated Landscapes; and Ancient Woodlands and Natural Designations. The assessment that there will be a beneficial impact on a cumulative scale is questionable.
	Neutral	There are no likely significant in-combination landscape effects regarding National and Regional Landscape Character Areas during the construction, operation and decommissioning stages. There will be no discernible improvement or deterioration to the existing landscape character of the topography and watercourses.	See Construction.	See Construction.	There would be a neutral impact resulting from the Cumulative Developments on the following landscape receptors: Land use; Communications and Infrastructure; Settlements, Industry, Commerce and Leisure; Public Rights of Way and Access; Scheduled Monuments, Listed Buildings, Conservation Areas and Registered Parks and Gardens.
	Negative	There is potential for likely significant adverse visual effects at the construction stage in combination with noise and dust effects at the viewpoint receptors, residential receptors, transport receptors and PROW receptors. With the viewpoint receptors, there is also overlap with the Cultural Heritage topic area and there is potential likely significant visual effects in combination with effects to Cultural Heritage receptors.	There are likely significant in-combination landscape effects at the construction and operation (Year 1) stages for the substation generating stations. These effects would be Adverse with a Moderate significance of effect.	See Construction.	None stated
Ecology and Biodiversity	Positive	None	Water quality is expected to significantly increase due to the reversion to permanent grassland under the array (reduced sediment run-off) and cessation of fertiliser and pesticides. The cessation of intensive farming is likely to benefit brown hares as a result of the lack of disturbance; solar panels also provide sheltering features. Badgers are likely to benefit from improved abundance of food items within the grassland under the arrays.	The restoration of the land to arable farmland would likely be beneficial for some species of farmland bird which require open sightlines, as well as for plant species associated with arable margins.	None stated
	Neutral	It is unlikely that any impacts on any designated sites will arise. No loss of woodland is anticipated in relation to the array construction.	Unlikely to be any impacts beyond the low possibility of contamination or sediment mobilization. Impacts on reptiles and amphibians are likely to be minimal, considering the adoption of ecological buffer zones and the restriction of development and vehicle movement to outside of	Decommissioning would be expected to have similar (or no worse) effects as construction. Depending on the ecological value of the habitats that develop over the lifespan of the scheme, certain areas may be retained on decommissioning.	The designated sites which were at risk of significant impacts from the Scheme were located substantially distant from the other three solar proposals; no cumulative impacts are likely to occur. Buffer zones protecting marginal habitats will be instigated in all cases.

Topic	Impact	Construction	Operation	Decommissioning	Cumulative Impacts
		The potential for loss of hedgerows/trees is very limited as the design process has reduced the clearance required. A total of 12 new hedgerow gaps, with 10 ditch crossings will measure between 3-6.5m wide. In the context of the Scheme's hedgerow network (approximately 65km), such losses are proportionately extremely small.	these. It is also unlikely that habitats within which breeding birds nest will be degraded. Perimeter fencing is not considered a barrier to badger movement. Should invasive species be present, impacts are considered unlikely due to the buffering of peripheral habitats.		
	Negative	There is a possibility of pollution events impacting designated sites due to the Scheme lying partially within the Laughton Common SSSI catchment. Contaminants may be discharged accidentally into watercourses during construction however the streams and ditches all drain into watercourses which are downstream of the SSSI. LWS are located close to the Shared Cable Corridor –prolonged trench opening may exacerbate fragmentation and degradation through any pollution events. Approximately 180-420m of hedgerow may be affected by the cabling works. Direct habitat loss is also associated with changes in the land use resulting from the Scheme. Direct and indirect impacts from the Scheme will also result in a reduction in the condition of a habitat and its suitability for some species it supports. There is also the risk of direct impacts on species populations associated with mortalities due to construction activities. The activities associated with construction may also facilitate the introduction of invasive species.	None	Much of the biodiversity value which will develop during operation may be lost. In order to revert back to arable use, it may be necessary to enhance the nutrient content of the soil – likely achieved through fertilisers. However, this is highly unlikely to be required and an increase in soil fertility is likely to arise. An increase in the use of pesticides and herbicides are also expected. Based upon current (2022) legislative protection, protected species which could be directly impacted by decommissioning activities would include badgers, water vole, otter, great crested newts, reptiles (grass snake) and breeding birds.	None stated
Socio Economics, Tourism and Recreation	Positive	The anticipated inbound of construction workers has the potential to increase accommodation occupancy rates, with significant beneficial effects on the Local Impact Area. The Scheme will also result in moderate-minor beneficial effects to the local construction economy and minor beneficial effects to the regional construction economy. The use of temporary accommodation could lead to an increase in accommodation employment and likely to lead to an uplift to the accommodation sector economy. This represents an increase in the local accommodation and food services economy, resulting in a moderate-minor beneficial effect.	Beneficial impacts will be felt to the local and regional employment sectors. There are also beneficial effects anticipated to the agriculture, mining, electricity, gas, water and waste (ABDE) grouped sector economy.	The direct employment from decommissioning is likely to benefit the construction employment sector.	The anticipated cumulative uplift in need for temporary accommodation for inbound construction workers is likely to result in a moderate beneficial effect to the local accommodation and services sector economy, which is a significant effect. Minor beneficial effects will also occur to the Regional Impact Area. The cumulative uplift in construction employment will also have a moderate beneficial effect to the Local Impact Area, which is a significant effect. Minor-moderate beneficial effects will also occur to the Regional Impact Area.
	Neutral	The level of accommodation required for temporary construction workers will displace a proportion of the usual number of visitors, but will have a neutral effect as any changes to the demographic profile are expected to be extremely low and unlikely to have a positive or negative bias.	None	Following completion of the decommissioning phase, employment will return to near baseline levels.	None stated

Topic	Impact	Construction	Operation	Decommissioning	Cumulative Impacts
	Negative	Scheme has the potential to negatively impact on some local employment sectors: specifically the agricultural, and tourism and recreation industries. Curtailment of agricultural production will impact the agricultural employment sector however the effect is considered negligible. There is an anticipated oversubscription of rooms for temporary accommodation for approximately 4 months during construction, with impacts on the availability of accommodation for tourism and recreation. This may result in a loss of spending money in the tourism economy. However, the effect is considered negligible. The uplift to the local residential population also presents an impact with regard to the number of people requiring access to local services, including health services, however the effect is considered negligible. Negligible effects on the public transport services are also anticipated. The Scheme is likely to have direct impacts on a number of Public Rights of Way and long-distance recreation routes. There are up to moderate-minor adverse effects on pedestrian and cycling traffic as a result of fear and intimidation from construction vehicle movements.	There are approximately 17 agricultural sector jobs that will remain lost during the Scheme's operational lifetime, with a long-term moderate-minor adverse effect in the Local Impact Area, and a long-term negligible adverse effect in the Regional Impact Area. This impact will reduce the value of the local agricultural economy with minor effects at the local, and negligible effects at the regional scale. There is a potential for the Scheme to reduce the desirability of the local area for tourism resulting in a drop in visitor spending during operation – with minor adverse effects locally and negligible effects at the regional level. The development of the Scheme will have a long-term impact on the landscape character of some tourism and recreation receptors that are reliant on the landscape context for their value, such as viewpoints, landmarks, and cultural heritage assets. This could therefore have a secondary impact on local business that are reliant on tourism, with moderate-minor impacts on both the local and regional areas.	The uplift in population associated with decommissioning is likely to affect some socio-demographic receptors (e.g. access to local services, accommodation, employment and education, and health and wellbeing). If the assessment of the construction phase effects is taken as a worst-case, the impacts on the sociodemographic environment can be estimated as have up to a medium-term temporary moderate-minor adverse effect in the Local Impact Area, and up to a medium-term temporary negligible adverse effect in the Regional Impact Area.	Cumulative demand for accommodation is likely to exceed the accommodation stock, displacing a notable proportion of the usual number of visitors, with minor adverse effects locally and negligible effects regionally. Economic impacts to the tourism and recreation sector are also anticipated from the cumulative developments. The Trent Valley Way could also experience a cumulative moderate adverse effect to the local area due to closures and restricted access, which is significant effect. The cumulative operation phase of the projects is anticipated to generate a loss of jobs in the energy sector as a result of the closure of West Burton A. This is a cumulative moderate adverse effect to the local area which is significant. The loss of jobs is also anticipated to result in adverse impacts to the ABDE grouped sector economy.
Transport and Access	Positive	None	None	None	None stated
	Neutral	A number of Public Rights of Way (PROW) operate throughout the Scheme. Pedestrian and cyclist activity on the roads and PROWs surrounding the Scheme is very low however the addition of vehicles to the network will affect the relative pleasantness of any pedestrian and cyclist journeys.	There will be around five visits to each Site per month for maintenance, typically made by light van or 4x4. Whilst each construction compound will have been removed, space will remain on the access tracks for vehicles to turn around to ensure that reversing will not occur onto the highway.	The number of vehicles associated with the decommissioning phase are not anticipated to exceed the number set out for the construction phase.	Traffic flows associated with the cumulative schemes will only affect links in the study area that have a low sensitivity. These roads are less sensitive to change compared to the more rural roads which will not be affected by the cumulative schemes. The percentage change on these roads is low. It is incredibly unlikely that all cumulative schemes are constructed simultaneously. The cumulative effects on the local highway network surrounding the Grid Connection Route will also be low, as the cumulative Schemes will not use the same routes. Sections of the Grid Connection Route for the Scheme will be shared with Gate Burton and West Burton, although the residual effects will not change as a result of this.
	Negative	There will be an average HGV Arrivals and Departures per Day of 38 (76 Trips). During peak construction this will increase to an average of 58 (116 Trips). Based on a total of 650 construction workers (including 50 at the Energy Storage Facility), the forecast number of cars/LGVs are a total of 233 cars and LGVs (466 trips). There will be 256 vehicles (512 trips) in relation to the cabling element of the works.	None	See Construction.	None stated

Topic	Impact	Construction	Operation	Decommissioning	Cumulative Impacts
		An increase in traffic could make it more difficult to cross the road, however the effects on severance will be minor.			
Soils and Agriculture	Positive	None	The soil resource will remain under a green cover during operation, providing several benefits to reduce erosion, drainage and plant nutrient availability. The recovery of soil organic matter under an extended fallow period will produce a medium term, reversable, local moderate beneficial impact, which is a significant beneficial effect. During operation, grass below the solar panels will need to be managed (e.g. sheep). The farm businesses impacted by the Scheme will receive some income from the Scheme's occupation, providing a new income stream which will produce a moderate impact, which is a significant beneficial effect for the medium term.	Decommissioning of the Scheme will allow a return to arable management of the land. The resulting short term, reversable and local effect of the return of agricultural land to the enterprises of the occupying farm businesses will be a minor beneficial impact.	None stated
	Neutral	None	None	There is an intention to return the land to agricultural land. No obstructions will be left in the soil that could interfere with cultivation (e.g. cables will be removed) and no changes to the physical characteristics of the soil will have taken place that could influence ALC grade. There will be a negligible impact, that is not considered to be significant.	None stated
	Negative	Construction work will start the temporary curtailment of arable production across the Scheme. The land does not cease to be agricultural land whilst agriculture is suspended and there is no actual loss of agricultural land resource. The residual effect is considered minor. Solar panel construction work will involve trafficking the land in a similar manner to the current arable land use. Heavy plant will include excavators and cranes. The Soil Management Plan (SMP) aims to conserve the soil resource and the resulting short term, reversable and local effect on the soil resource across the Scheme is considered minor. The temporary curtailment of farming practices will result in a reduction in cropped area for these enterprises. This is considered as a constraint however farming practices will not be entirely terminated – only the land that is occupied. The resulting short term, reversable and local effect of construction disturbance on the farm businesses will be minor.	There will be no loss of agricultural land resource during operation and there will be a negligible impact, which is not considered significant.	Decommissioning will involve activities similar to that during construction, including trafficking the land in a similar manner to the current arable land use (e.g. combine harvesters). The measures from the SMP also extend to decommissioning and land restoration and it will limit impacts to the soil. The SMP covers the appropriate handling of stored soil, aftercare of the land and identification of remediation of any areas of compacted soils. The resulting residual impacts will be short term, reversable and localised, which is considered to be a minor impact.	None stated
Cultural Heritage	Positive	None	Impacts to buried archaeology would be significantly beneficial at 22 of the archaeological areas within the Order Limits. Remains would be taken out of the agricultural cycle of regular ploughing where they might otherwise be destroyed.	None	None stated

Topic	Impact	Construction	Operation	Decommissioning	Cumulative Impacts
			There would also be beneficial effects to the overall character of the designated heritage assets since the new mitigation planting would assist with framing and softening within the landscape.		
	Neutral	None	None	None	None stated
	Negative	Slight Adverse effects are predicted at five Scheduled Monuments, and Moderate Adverse effects at one Scheduled Monument – which could result in significant effects. There is also the potential for Large Adverse effects upon one Scheduled Monument which would also be significant. Impacts to archaeological remains are between Negligible and Slight Adverse. There is the potential along the Shared Cable Corridor for Moderate Adverse impacts to what are likely to be regionally important remains which could result in significant effects. However, these impacts are not fully understood at present. There could also be Large Adverse effects upon a kiln of possible Iron Age/Romano-British date. However, the significance of effects are also uncertain. Slight Adverse effects are predicted at six Listed Buildings. There would be additional visual impacts during the construction phase along the cable route corridor, which would be visible within the settings of two Listed Buildings. Slight Adverse effects are also predicted at a Registered Park and Garden. The visual impacts from the Scheme would have a very low-level industrialising effect upon the rural character of part of the distant Trent valley landscape. This would result in Slight Adverse effects for assets of Medium value.	There is potential visibility of the Scheme at five Scheduled Monuments, but this would be restricted to slight glimpses. However, the close proximity of one Scheduled Monument (Thorpe Medieval Settlement) would result in much greater visual impact which is considered significant. For most of the non-designated historic buildings, the effects would be either Neutral or Slight Adverse. However Major Adverse impacts would result in significant Moderate Adverse effects in the absence of additional mitigation at three sites. There would be Slight Adverse impacts to five Grade II Listed Buildings and two Grade II* Listed Buildings.	Decommissioning would require plant movement and other activities similar to during construction, which could have an adverse impact upon the settings of nearby heritage assets. Impacts would be neutral as the impacts are no greater than during operation, and would be temporary, short term and reversible.	Cumulative effects could occur at three heritage assets where views from the Lincoln Cliff contribute to the significance of the asset. This is because the other NSIPs in the vicinity are also likely to be visible from these elevated viewpoints along the Lincoln Cliff, but not from those within the Trent Valley. Should all of the NSIPs identified be permitted, significant effects are possible at one or more assets.
Climate Change	Positive	None	The Scheme will provide a major beneficial effect on the climate and a net reduction in GHG emissions over the lifetime of the Scheme. Over the estimated 40 year lifespan there would be a reduction of 5,973,729 tCO_2e compared to the scenario where the Scheme does not go ahead.	None	The cumulative effect of other solar projects (West Burton, Gate Burton, Tillbridge) will also be beneficial in terms of climate change resilience given that the combined effect of the renewable energy will serve to counter the effects of climate change.
	Neutral	None	None	None	None stated
	Negative	The greatest impact of GHGs is the embodied carbon in the materials. Of these. the manufacture and supply of PV panels and batteries will be the largest source of GHG emissions. The worst case (Option B) total GHG emissions from construction is around 444,475 tCO_2e, equating to around 222, 237 tCO_2e per year. GHG emissions from construction are considered to have a minor adverse effect on the climate.	GHG emissions will be generated as a result of operational activities such as the transportation of operational workers, water consumption and replacement of materials. The production of replacement batteries at the midpoint of the project's lifespan is the greatest contribution to GHG emissions during the operational stage (89% of the total operational	It is expected that emissions of GHGs will be far lower than construction and that the main source will be from worker transportation. The ES admits a '*there is uncertainty over the total estimate of GHG emissions that will be produced*' during decommissioning. The SoS is therefore minded to keep this in mind during their assessment of the Scheme.	None stated

Topic	Impact	Construction	Operation	Decommissioning	Cumulative Impacts
			emissions), at around 277,300 tCO_2e in the worst case (Option B).	Whilst a calculation of 25,074 tCO_2e has been provided, there is a possibility that emissions could be higher. It is expected that the decommissioning stage will result in minor adverse effects.	
Ground Conditions and Contamination	Positive	None	None	None	None stated
	Neutral	None	None	None	None stated
	Negative	Risk of potential contaminant linkages from contaminated soils to human receptors, controlled waters and to the built environment. There are a number of surface water features on and adjacent to the Scheme, however, limited sources of contamination have been identified. Small areas of potentially infilled ponds/Made Ground have been identified, however, given the small scale and the age of any infill material, the potential for gas generation is low. The potential for hazardous ground gases to accumulate within confined spaces is considered very low. No buildings are proposed in the vicinity of potentially infilled ponds/pits, breaking the contaminant linkage to the built environment. Industry best practice measures would be adopted to avoid and reduce the risk to ground conditions. With embedded mitigation and the implementation good industry practices which will be incorporated into the CEMP, the potential effects or risk of contamination will be reduced to moderate/minor.	See Construction.	See Construction.	None stated
Hydrology, Flood Risk and Drainage	Positive	None	None	None	None stated
	Neutral	None	None	None	None stated
	Negative	There is the potential for mud and debris to block drainage networks which could result in flooding to construction workers and equipment – the effect is considered to be Moderate Adverse. The temporary increase in impermeable area also has the potential to increase flooding both on and off site – the effect is considered to be Moderate Adverse. Site activities can also lead to compaction of the soil, increasing flood risk – the effect is considered to be Moderate Adverse. Site activities also have the potential to result in silt contamination to surface water and groundwater bodies, which is considered a Moderate Adverse effect. There is also the risk of spillages of pollutants stored and / or used on site, causing pollution of groundwater bodies if not carefully controlled. The effects could be of a Medium magnitude on the local watercourses.	Equipment such as substations and energy storage areas will generate increased surface water runoff. This could increase localised flooding and increase flood risk to people and property, resulting in Major Adverse effects. An increase in the volume of water discharged has the potential to increase the flood risk to areas downstream. Whilst the effects would be temporary, this is considered to have an effect of Medium Adverse magnitude to people and property due to the potential risks (loss of life) and the economic damages – therefore the effect is Major Adverse. There is the potential for mud and debris to block drainage networks which could result in flooding to construction workers and equipment – the effect is considered to be Moderate Adverse. Runoff could contain diffuse urban pollutants such as hydrocarbons, heavy metals, and nutrients as well as debris and silt which could be	The potential effects of the Scheme during decommissioning are likely to be the same or no worse than (i.e. a worst case scenario basis) as those encountered during construction. Therefore, effects considered for construction are similarly expected during decommissioning.	None stated

Topic	Impact	Construction	Operation	Decommissioning	Cumulative Impacts
		Surface water may also be subject to inappropriate wastewater disposal from welfare facilities. Construction / Decommissioning foul water will not be discharged into a watercourse under any circumstances and therefore the magnitude of impact and significance is considered Negligible. With mitigation, the residual effect is considered to be negligible for all negative impacts.	discharged to nearby watercourses, which could have a Moderate Adverse effect on water quality. Spillages of pollutants (e.g. oil) on highways can be transported to watercourses via runoff, where they could impact upon ecological life, or infiltrate to ground. The significance of effect is Minor Adverse. Following implementation of the proposed mitigation the residual effect is considered to be Negligible for all negative impacts.		
Noise and Vibration	Positive	None	None	None	None stated
	Neutral	None	None	None	None stated
	Negative	Site activities will generate noise and vibration emissions. Construction noise levels at all receptors throughout the Scheme are predicted to be within the daytime construction noise criteria of 65 dB(A). Construction noise and vibration is temporary and would likely be experienced by limited receptors at any given time as work progresses across the Scheme. Therefore, a moderate/minor residual effect is predicted.	The primary sources of noise during operation are the inverters and transformers serving the solar panels. Noise levels at the nearest receptors would exceed the existing background noise levels in many cases. Mitigation has been used to ensure noise levels do not result in significant impacts throughout the Scheme during operation, resulting in a moderate/minor residual effect.	See Construction. Noise and vibration effects during the decommissioning phase will be similar or less than the noise effects during the construction phase.	A combined assessment of operational noise for Cottam 3a and 3b has been undertaken. The assessment shows that the in-combination effects of the two schemes on the common receptors is negligible (not significant).
Glint and Glare	Positive	None	None	None	None stated
	Neutral	None	The worst case scenario is predicted to be minor/negligible adverse for aviation receptors.	None	None stated
	Negative	None	A moderate effect is predicted for 13 dwellings (if a fixed mounting system is implemented) or 14 dwellings (tracking system). A moderate effect is predicted for a 2.2km section of Kirton Road – B1205 (tracking system). A moderate effect is predicted towards train driver receptors (for both types of mounting system). Once mitigation is implemented, overall impacts are expected to be minor/negligible for all receptors.	None	The cumulative glint and glare effect of West Burton Solar Project, Gate Burton Energy Park and Tillbridge Solar is not predicted to result in a significant impact due to mitigating factors. Cumulative effects are possible, however, the impact is predicted to be minor/negligible. 32 dwellings will have some visibility of both Cottam 3a and Cottam 3b and some road receptors will also have some visibility of both these sites. However, the existing and proposed screening is likely to significantly reduce the visibility of both sites; therefore minor/negligible impacts are predicted.
Air Quality	Positive	None	None	None	None stated
	Neutral	None	None	None	None stated
	Negative	Site activities are likely to produce dust emissions during construction and decommissioning. Following the implementation of mitigation measures included within the CEMP, the significance of the effects is considered to be negligible.	Dust emissions – see Construction. Fire risk associated with Lithium Ion batteries means smoke could be blown to nearby receptors. Following the implementation of mitigation measures, the significance of the effects is considered to be negligible.	See Construction.	None stated
Waste	Positive	None	None	None	None stated

Topic	Impact	Construction	Operation	Decommissioning	Cumulative Impacts
	Neutral	None	None	None	None stated
	Negative	Construction is anticipated to result in waste generation, including construction materials and wastewater. Employee activity will generate commercial, food and sewage waste. The total estimated construction, demolition and excavation (CD&E) waste is 77,400-78,100 tonnes over the 24-month construction period (38,700-39,100 tonnes per annum), which is considered a minor magnitude increase for the Local Impact Area.	Waste arising during operation will be minimal and will predominantly be related to the removal of expired/broken equipment and packing material for replacements. The total estimated CD&E waste to be generated from the Scheme per annum during operation is 190-191 tonnes. Assuming that waste is handled proportionally between Lincolnshire and Nottinghamshire, this constitutes a negligible magnitude increase in CD&E waste handling.	Decommissioning is anticipated to generate substantive waste electrical or electronic equipment (WEEE) including photovoltaic panels, batteries, and substation equipment. The total WEEE generated from the Scheme's decommissioning is 77,000-85,000 tonnes, of which 7,000-14,000 tonnes is considered as hazardous (batteries). Waste handling facilities in Nottinghamshire are likely to see a significant adverse effect as a result of the lack of landfill capacity. Mitigation is expected to reduce the significance of impact to a slight or moderate effect.	None stated
Minerals	Positive	None	None	None	None stated
	Neutral	The Scheme is partially within a Mineral Safeguarding Area (MSA) for sand and gravel. The Scheme would not require deep excavations or foundations. Disturbance is limited to the surface layers rather than underlying deposits. Therefore, the Scheme will not disturb the mineral deposits to the extent that they become unviable to exploit. The presence of the Scheme would not impose a physical constraint on mineral extraction in the local vicinity. The Scheme would not adversely affect the local mineral supply as the it is unlikely that the reserve underlying the Scheme will need to be worked within the lifetime of the Scheme. Furthermore, the land will be restored upon decommissioning and any minerals will be available to exploit. There are not any implications for existing or proposed exploration and exploitation of oil and gas resources.	See Construction.	See Construction.	There are no other plans or proposals for other developments that directly affect the mineral deposits affected by the Scheme. The Shared Cable Route Corridor minimises the overall impact to mineral resources by reducing the cumulative bisecting of safeguarded reserves. The cumulative impact of the Scheme, in combination with the West Burton Solar Project and Gate Burton Energy Park, is not considered to have a significant adverse impact on the supply of sand and gravel within Lincolnshire.
	Negative	The Cable Route Corridor, particularly in the Trent Valley, has the potential to result in operational issues for future mineral operations and might restrict efficient exploitation. This has been mitigated by routes following existing infrastructure corridors or edges of landscape features rather than directly crossing open fields. This avoids creating a further obstruction to the future exploitation of the mineral resource.	See Construction.	See Construction.	The Cable Route Corridors linking the solar array Sites to the former Cottam Power Station site overlap with proposed cable corridors for Gate Burton Energy Park, and for a short distance, with the cable corridor for the proposed West Burton Solar Project. Much of the overlap is within an area of safeguarded sand and gravel reserves associated within the Trent Valley. Any other proposals for development that sterilise safeguarded mineral resources could have an impact on the supply of sand and gravel within Lincolnshire.

Appendix A. Central Lincolnshire Local Plan

Appendix B. Cumulative Construction Traffic Routes

Appendix C. Neighbourhood Plans

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