



BEACON FEN ENERGY PARK

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List of Outstanding Issues and Information

Outstanding issue/info.	Section/Paragraph	Responsibility	Action

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Table of Contents

13.	Glint	1
13.1	Introduction	1
13.2	Legislation and Policy	1
13.3	Consultation & Scope of Assessment	2
13.4	Assessment Methodology & Significance Criteria.....	5
13.5	Baseline Conditions	8
13.6	Assessment of Effects	11
13.7	Mitigation	30
13.8	Residual Effects	30
13.9	Assessment of Cumulative Effects.....	31
13.10	Summary	34

Figures

Figure 13.1	Aviation Receptors	9
Figure 13.2	– Number of Daylight and Sunshine Hours per Month in Waddington	14
Figure 13.3	– Section of the Railway line track assessed (orange).....	15

Tables

Table 13.1	– Summary of Consultation Undertaken to Date	2
Table 13.2	– Matters to be Scoped out of the Assessment	4
Table 13.3	– Significance of Effect Matrix	7
Table 13.4	Summary and Assessment of Significance for Road Receptors	17
Table 13.5	Initial Review of Observation Points	20
Table 13.6	Modelling Results for Local Properties	26
Table 13.7	Significance of each Observation Point	28
Table 13.8	Cumulative Sites.....	31

Appendices

Appendix 13.1	Legislation, Policy and Guidance
Appendix 13.2	Zone of Theoretical Visibility
Appendix 13.3a	ForgeSolar Glint Report: Road, Railway & Aviation
Appendix 13.3b	ForgeSolar Glint Report: OPs1-40
Appendix 13.3c	ForgeSolar Glint Report: OPs41-55
Appendix 13.4	Mathematical Equations

13. Glint

13.1 Introduction

13.1.1 This Chapter reports the preliminary assessment of the likely significant effects of the Proposed Development on Glint. In particular it considers the potential for likely significant effects of glint caused by the photovoltaic (PV) array elements of the Proposed Development on ground-based receptors, including road, rail and local dwellings. In addition, glint effects on aircrafts operating in the surrounding area will be considered.

13.1.2 This Chapter (and its associated figures and appendices) is not intended to be read as a standalone assessment and reference should be made to the front end of this PEIR (Chapters 1 – 5) and particularly to the description of the Proposed Development in Chapter 2 which includes details about the Site, the design parameters and construction methodology, as well as the final chapter, 'Summary of Environmental Effects' (Chapter 17).

13.1.3 This chapter is accompanied by the following Appendices and Figures:

- Appendix 13.1 Legislation, Policy and Guidance
- Appendix 13.2 Zone of Theoretical Visibility
- Appendix 13.3a ForgeSolar Glint Report: Road, Railway & Aviation
- Appendix 13.3b ForgeSolar Glint Report: OPs1-40
- Appendix 13.3c ForgeSolar Glint Report: OPs41-55
- Appendix 13.4 Mathematical Equations

13.1.4 As set out within Chapter 1, the information set out within this Chapter is preliminary and intended to inform consultees (both specialist and non-specialist) about the likely environmental effects of the Proposed Development, helping to inform their consultation responses.

13.2 Legislation and Policy

13.2.1 The legislation and policy considered relevant to the assessment of Glint are listed below, with details provided in Appendix 13.1.

Planning Policy

13.2.2 The applicable planning policy includes:

- National Planning Policy Framework (September 2023)
- Planning Practise Guidance
- **Published (Emerging) National Policy Statements**
 - Overarching National Policy Statement for Energy (NPS EN-1), November 2023;
 - National Policy Statement for Renewable Energy (NPS EN-3), November 2023.

- **Local Planning Policy**
 - Central Lincolnshire Local Plan (adopted April 2023)
 - South East Lincolnshire Local Plan

13.3 Consultation & Scope of Assessment

Consultation Undertaken to Date

13.3.1 Consultation will be ongoing throughout the preparation of the DCO application; to date, it can broadly be divided into the following key stages:

- EIA Scoping;
- Early Non-Statutory Consultation; and
- Direct Topic-Specific Consultation.

13.3.2 Table 13.1 provides a summary of the consultation activities undertaken in support of the preparation of this Chapter.

Table 13.1 – Summary of Consultation Undertaken to Date

ORGANISATION	DATE	SUMMARY OF CONSULTEE RESPONSE	HOW THIS HAS BEEN ADDRESSED
EIA Scoping			
The Planning Inspectorate (Scoping Opinion)	25 th May 2023	<p>Provided that sufficient information be provided in the application and CEMP in relation to locations of construction compounds and working practices to minimise any effects of glint, the Inspectorate agrees to scope this matter out.</p> <p>It was unclear whether the assessment of glint effects on fixed point receptors will only consider a 5km study area. The Applicant should consider the potential for glint and glare effects to occur beyond 5km.</p>	Noting the Inspectorate's comment that receptors should be identified based on the potential for likely significant effects to occur rather than an arbitrary fixed distance from the site, consideration has been given to sensitive ground-based receptors further away. Given the distance and screening present, no specific receptors at a greater distance, with potential to experience significant effects, have been identified.
BBC (Boston Borough Council)		Any potential for glint and glare on local receptors, such as Boston Aerodrome should be taken into account.	Local receptors, such as Boston Aerodrome have been taken into account.
LCC (Lincolnshire County Council)	16 th May 2023	Council agrees that this matter should be 'scoped in' and appropriate assessment included as part of the Environmental Statement (ES).	Glint has been 'scoped in' and included in PEIR and ES Chapter.
NKDC (North Kesteven District Council)	18 th May 2023	It states that any airfields within 15km will be considered in the initial appraisal and that this study area is consistent with standard practice and hard limits within the modelling software. However, this should be clarified and agreed with the relevant aviation and defence consultees as necessary.	Relevant aviation consultees have been included and a suitable study area range has been established. All airfields within 25km have been identified, with airfields within 15km included in the assessment.

ORGANISATION	DATE	SUMMARY OF CONSULTEE RESPONSE	HOW THIS HAS BEEN ADDRESSED
			Dialogue has been opened with NATS and the DIO to agree the study scope and parameters.
WLDC (West Lindsey County Council)		<p>Cumulative effect of Beacon Fen Energy Park with these other solar farm projects and any other solar parks in the nearby area, such as Heckington Fen and Springwell Solar Farm, also within the North Kesteven District have to be considered.</p> <p>These four large scale solar projects (Nationally Significant Infrastructure) to be applied for through a Development Consent Order need to be considered. These are:</p> <ul style="list-style-type: none"> • 600MW Cottam Solar Project; • 500MW Gate Burton Solar Project; • 480MW West Burton Solar Project; and • 500mw Tillbridge Solar Project. 	<p>Cumulative effect of Beacon Fen Energy Park with other solar farm projects and any other solar parks in the nearby area, such as Heckington Fen and Springwell Solar Farm, also within the North Kesteven District have been considered. The four large scale solar projects (Nationally Significant Infrastructure) to be applied for through a Development Consent Order have been considered in the cumulative section. These include:</p> <ul style="list-style-type: none"> • 600MW Cottam Solar Project; • 500MW Gate Burton Solar Project; • 480MW West Burton Solar Project; • 500mw Tillbridge Solar Project.
Direct Topic-Specific Consultation			
National Air Traffic Services (NATS)	9 th August 2023	The Site is at a distance that it does not need to be considered.	As the site is 20+km from any NATS installation there were no comments.
Defence Estates	8 th August 2023	<p>Awaiting Response.</p> <p>An email was sent to DIO-safeguarding-statutory@mod.gov.uk on the 8thAugust. We are awaiting a response.</p>	Awaiting response.

Scope of the Assessment

- 13.3.3 The scope of the assessment includes consideration of effects on aviation in the vicinity of the Site, motorists using local roads and any effects on buildings and the railway. It also includes the assessment of cumulative effects of other solar sites in planning in the area, as detailed by WLDC.

Effects not considered within the Scope

- 13.3.4 Table 13.2, below, highlights the effects that will not be considered within the scope during the construction and decommissioning phases. In addition, receptors that lie further than 5km and outside the ZTV are not considered within the scope.

Table 13.2 – Matters to be Scoped out of the Assessment

PROJECT PHASE	RATIONALE	COMMENTARY
Construction	The installation works are temporary, and it is not possible to model effects within the standard software. Although there is a slight risk of reflections from steel legs prior to mounting the panels on top, this is limited and adopting a progressive approach to installation should considerably limit these. Consideration is given to the effects, but detailed calculation of duration or glint intensity is not provided.	The Inspectorate agreed this could be scoped out of the assessment provided sufficient information is included in the CEMP
Decommissioning	The decommissioning works will be virtually the mirror of installation. No different effects are expected to be present and all will be temporary.	The Inspectorate agreed this could be scoped out of the assessment provided sufficient information is included in the CEMP/DEMP.

Limitations & Exclusions

- 13.3.5 The information within this Chapter is preliminary and intended to inform consultees. As such, this Preliminary Environmental Information Report (PEIR) has been prepared at a point in the design process when parameters of the design are certain enough for an assessment to be based upon, but there is still sufficient flexibility to incorporate feedback from consultees.
- 13.3.6 At this stage of the planning process, the following matters are still ongoing:
- Archaeology evaluation was undertaken in late 2023 and the result will be considered in the ES.
- 13.3.7 The above matters will be completed in advance of submission and incorporated within the Environmental Statement (ES), which will be consulted upon as part of the determination process.
- 13.3.8 It is important to understand the definitions for glint and glare.
- 13.3.9 An assessment will be undertaken of the likely significant effects of the Proposed Development on the environment with respect to ‘glint’.
- 13.3.10 Glint, glare and dazzle are often used interchangeably depending on the definition attached to each term by different organisations. For example, the Sandia National Laboratories defines glint as the specular direct reflection of sunlight off smooth materials, such as solar panels and does not account for the diffuse component. The US Federal Aviation Administration on the other hand defines glint as a ‘momentary flash of bright light’ and glare as a ‘continuous source of bright light’. The UK Building Research Establishment makes use of the terms glint and dazzle when referring to reflected sunlight from a glazed façade.
- 13.3.11 In all cases, reflected sunlight can be either in the form of specular reflections, which are caused by reflections from smooth surfaces or diffuse reflections which are reflections from rough surfaces. The glint assessment will interpret glint as the reflected sunlight off smooth surfaces, which causes a specular reflection and glare as the reflected sunlight off a rough surface. Owing to the

intensity of glint being much higher than glare, the assessment will focus on glint effects that have potential to cause more significant impacts.

- 13.3.12 The intensity of glint is higher than glare and, as such, whilst the assessment will focus on glint effects, the effects of potential glare will also be covered. The terminology that will be applied in the assessment does not in itself distinguish between or imply the duration of effect (as momentary or prolonged) but rather, the assessment will consider all events, and comment on the expected duration of those events. Therefore, the assessment encompasses all effects, as identified in the industry standard Forge Solar software.
- 13.3.13 For the assessment of glint, there are a number of limitations associated with the modelling that it is important to be aware of. These are summarised, below.
- 13.3.14 The model calculates its results based upon the geometric relationship between the observation point at a specific height, the reflective plane at height (panels) and the position of the sun at each time interval. It, therefore, takes no account of any screening features whatsoever.
- 13.3.15 Glint can only occur when direct sunlight can reach the solar panels. Diffused lighting, caused by such weather conditions as cloud, fog, and mist cannot cause glint due to the low energy intensity of the light incident on the panels. However, the software assumes it is sunny, at the maximum intensity possible given the season, 365 days per year. The computer model suggests when glint can happen not when it will happen, which is why further interpretation by the assessor is important.
- 13.3.16 The results have been interpreted in the context of the wider assessment and the methods and limitations discussed. These have been further refined to account for local prevailing weather conditions, such as cloud cover.

13.4 Assessment Methodology & Significance Criteria

Extent of the Study Area

- 13.4.1 A general study area of 5km has been applied for motorists, buildings and railways due to glint intensity diminishing with distance from the source and general ground-level visibility to low-lying objects (3.5m agl) being minimal distances greater than 5km. Sensitive receptors beyond 5km will still be considered where there is expected to be direct visibility to the Site.
- 13.4.2 Aerodromes within 15km of the Proposed Development have been considered. In most cases, aerodromes located more than 5km away will be unaffected by glint effects although, since air traffic control towers (ATCT) are often much taller than their surroundings, they tend to have better visibility. Final approach flightpaths are assumed to extend 2 miles (~3.2km) from the runway threshold so pilots at the start of this approach could be much closer to the solar farm than the aerodrome, itself.

Assessment Methodology

- 13.4.3 The method of baseline data collection and assessment is in accordance with current guidance and industry best practice.
- 13.4.4 Applicable guidance, particularly in relation to aviation, is summarised below and expanded upon in Appendix 13.1. There is no formal guidance for assessing glint impacts on other ground-based receptors, so best practice applies some of the concepts from the aviation.
- Aviation Guidance (CAA);
 - Aviation Guidance (FAA); and
 - Aviation Guidance (CAST).

Significance Criteria

- 13.4.5 The criteria used to determine the Significance of effects in this chapter differs slightly from the approach used in other chapters. The magnitude of effect is determined by the intensity of the glint, which is classified by the computer model as ‘yellow’ glint (medium intensity with potential for temporary afterimage), ‘green’ glint (low intensity with low potential for temporary afterimage), or no visibility to the glint effect. In general, low intensity ‘green glint’ is considered to be ‘Not Significant’, unless the receptor in question happens to be an ATCT, which, due to its high sensitivity, is not permitted to tolerate even green glint, so this would be considered Significant as well. Further detail on the sensitivity of the receptor, the magnitude of change and the Significance of effect, is provided below.

Sensitivity

- 13.4.6 For the purposes of this assessment, the sensitivity of the receptor is judged based on the likely consequence of a negative effect. For example, the potential consequence of a motorist or train driver being dazzled by glint could be (in a worst-case scenario) a collision or major accident.
- 13.4.7 A receptor that is considered to have potential to experience a possible health and safety risk is allocated as having a High sensitivity. A receptor that has little or no potential for physical harm, but where people could experience nuisance, such as glint being visible from a property, is allocated as a Medium sensitivity. A receptor that is uninhabited and irregularly frequented, or a building that does not have windows, such as a substation or warehouse, is allocated as a Low sensitivity. A place where people are not usually present, such as an agricultural field with no public access, is considered to have Negligible sensitivity (i.e. it is unlikely to cause any issues even if glint were to be visible).

Magnitude

- 13.4.8 For the purpose of this assessment, the magnitude of effect is primarily based on the output of the computer model, which, in the event that any glint is visible, provides a binary result for standard glint effects. Green glint is low intensity glint with no potential for temporary after image. In this context ‘after image’ is the residual effect that remains temporarily visible after glancing towards and then away from a very bright light source. Yellow glint is higher intensity glint that does have some potential for temporary after image. Further

context for the magnitude of effect is provided by the duration of effect and the time of the day that it occurs.

13.4.9 The computer model predicts glint effects in the absence of any consideration of screening and it assumes optimum sunlight conditions persist throughout the year. It does not recognise whether there is any intervisibility between the solar panels and the receptor and does not of its own accord account for changing weather. These elements of assessment require human intervention to consider whether, in reality, visibility to panels capable of reflecting light is possible.

13.4.10 As stated above, the level of glint predicted by the model does not take into account the screening present or obstructions that may affect visibility to the Site. Therefore the magnitude of effect is determined by the combination of the direct output of the model, alongside consideration of the visibility of the Site from the receptor. The model output may predict yellow or green glint but if there is no visibility then the magnitude would still be assessed as Minor to Negligible to None. The model will predicted a specific number of theoretical glint minutes but if these effects can not be actively observed, they can not produce any adverse effects.

Significance

13.4.11 This assessment focuses on High and Medium sensitivity receptors. It is considered that, yellow glint received at these receptors should be considered to be Significant. If yellow glint is predicted in the Forge Solar model (which does not account for screening), but, in reality, the receptor is already screened and there is no visibility or if visibility to potential glint effects will be removed by mitigation, effects at these receptors will be considered to be Not Significant. In general, low intensity green glint is considered to be Not Significant unless the receptor in question happens to be an ATCT is not permitted to tolerate green glint.

13.4.12 Table 13.3 illustrates the ‘magnitude of change’ (i.e. magnitude of impact) and the ‘sensitivity of the receptor’, which is used to classify each receptor.

Table 13.3 – Significance of Effect Matrix

MAGNITUDE OF CHANGE	SENSITIVITY OF RECEPTOR			
	High	Medium	Low	Negligible
Yellow Glint	Moderate to Major	Minor to Moderate	Negligible	Negligible
Green Glint	Minor*	Negligible	Negligible	Negligible
No Glint Visible	None	None	None	None

**Except for an ATCT where no glint can be tolerated, hence even green glint would be considered ‘Major’*

- 13.4.13 Ultimately, a statement of whether any identified harm does or does not represent a Significant effect is provided in respect of each glint receptor using the following terminology: ‘Significant’ or ‘Not Significant’.

13.5 Baseline Conditions

Current Baseline Conditions

- 13.5.1 There will already be some baseline glint at receptors due to the presence of multiple reflective surfaces in the local area, such as other solar farms, glasshouses, waterbodies, agricultural polythene, windows in houses and windscreens in vehicles.

Baseline Survey Information

- 13.5.2 A baseline survey was conducted using desktop survey analysis.
- 13.5.3 The Grantham to Skegness Line, managed by East Midlands Railway, runs to the south of the Site, between Sleaford and Heckington, at a distance of approximately 2.4km. It passes to the south of Heckington with most of the track further than 5km away. The Peterborough to Lincoln Line, runs from Lincoln to the north, southwards via Sleaford and on towards Spalding. Train drivers operating trains on these tracks are important receptors and form part of the baseline.
- 13.5.4 There are numerous roads and small country lanes within the 5km study area of the Site. Not all of these roads will need to be assessed as many lie outside of the area within which effects could theoretically be received. Studies have therefore focused on receptors lying within the ZTV and within the ground glint zone. Where receptors such as roads cross areas within the ZTV and GGZ, only those sections within the area predicted to have capacity to receive glint have been assessed. There are 12 route receptors that have been considered in the assessment which form part of the existing baseline. These include the following:

- Route 1 – A17;
- Route 2 – B1395;
- Route 3 – Howell Fen Drove;
- Route 4 – Heckington Road (south of Howell);
- Route 5 – Heckington Road (north of Howell);
- Route 6 – Thorpe Road;
- Route 7 – Lane connected to Thorpe Road;
- Route 8 – Field Lane;
- Route 9 – Littleworth Drove;
- Route 10 – Star Fen Road;
- Route 11 – Church Lane;
- Route 12 – Cow Drove;

- 13.5.5 There are several airfields within 21km of the Site. These include:

- RAF Coningsby;
- RAF Cranwell;

- Anwick (Old Manor Farm)¹;
- RAF Barkston Heath;
- Boston (Wyberton)²;
- Bloxholm³;
- Whaley Farm⁴;
- Wilsford⁵;
- Pointon⁶;
- Sepringham Fen⁷; and
- Decoy farm⁸.

13.5.6 Figure 13.1 illustrates the aviation receptors in the vicinity of the Site. The aviation receptors within 15km of the Site include RAF Coningsby, RAF Cranwell, the airstrip at Anwick (Old Manor Farm) and the airstrip at Boston airfield.



Figure 13.1 Aviation Receptors

13.5.7 The closest aviation receptor is RAF Coningsby which is located approximately 9.5km north of the Site boundary.

13.5.8 There are also a number of dwellings and commercial premises within the study area and within the ZTV and GGZ. In some cases, the identified receptor is considered to be representative of several discrete receptors in close proximity. For the purposes of this report these receptors are called Observation Points (OP) and include:

¹ [Anwick \(Old Manor Farm\) - Airfields of Britain Conservation Trust UK \(abct.org.uk\).](https://www.abct.org.uk/)

² [Boston \(Wyberton\) - Airfields of Britain Conservation Trust UK \(abct.org.uk\).](https://www.abct.org.uk/)

³ [Bloxholm - Airfields of Britain Conservation Trust UK \(abct.org.uk\).](https://www.abct.org.uk/)

⁴ [Whaley Farm - Airfields of Britain Conservation Trust UK \(abct.org.uk\).](https://www.abct.org.uk/)

⁵ [Wilsford - Airfields of Britain Conservation Trust UK \(abct.org.uk\).](https://www.abct.org.uk/)

⁶ [Pointon - Airfields of Britain Conservation Trust UK \(abct.org.uk\).](https://www.abct.org.uk/)

⁷ [Sempringham Fen - Airfields of Britain Conservation Trust UK \(abct.org.uk\).](https://www.abct.org.uk/)

⁸ [Decoy Farm - Airfields of Britain Conservation Trust UK \(abct.org.uk\).](https://www.abct.org.uk/)

- OP1 – Westmoorland Farm;
- OP2 - Residential properties in Howell;
- OP3 - The Farm Kitchen and residential property;
- OP4 - Residential properties in Ewerby Thorpe;
- OP5 - Residential properties Ewerby (east);
- OP6 – Residential properties Ewerby (north);
- OP7 - Residential properties Ewerby (south);
- OP8 - Individual residential property on Asgarby Road, to the south of Ewerby;
- OP9 – Boughton;
- OP10 - Asgarby Road, south of A17;
- OP11 - Property on Sleaford Road, Heckington (west);
- OP12 - Residential area, Sleaford Road, Heckington (west);
- OP13 - Dwelling at Home Farm;;
- OP14 - Rose Cottage;
- OP15 - East of Heckington, Boston Road;
- OP16 - Residential properties to the northeast of Heckington;
- OP17 - Residential properties to the north of centre of Heckington;
- OP18 - Residential properties at periphery of Heckington;
- OP19 - Properties in cul-de-sacs in Heckington (north peripheries);
- OP20 - Bungalows on Potesgrave Way;
- OP21 - Pine Warren House and adjacent properties;
- OP22 - Properties on A17;
- OP23 - The Picnic Bar café;
- OP24 - Heckington MOT Centre;
- OP25 - Garwick Café;
- OP26 - Property to the south of the A17 on Caterplot Road;
- OP27 - Property on Great Hale Drove;
- OP28 – Garthwest;
- OP29 - Cluster of properties along the B1395;
- OP30 - Residential properties north of cluster;
- OP31 -Residential property on the B1395;
- OP32 - Cluster of houses on Littleworth Drove;
- OP33 - Vine Cottage, Littleworth Drove;
- OP34 - Farmstead, Littleworth Drove;
- OP35 - Houses on Littleworth Drove, to the west of Star Fen Road;
- OP36 - Court Row Farm, Littleworth Drove;
- OP37 - Paddocks Paws Littleworth Drove;
- OP38 - Farm, east of Star Fen Road;
- OP39 - Cluster of houses on Star Fen Road;
- OP40 - Barworth Research;
- OP41 - Large complex on the B1395;
- OP42 - Bungalow with farm buildings on the B1395;
- OP43 - 91 Clay Bank;
- OP44 - House and farm on Clay Bank road;
- OP45 - Farm estate on Clay Bank;
- OP46 - Cluster of residential properties in east South Kyme;
- OP47 - Residential area on Low Road;
- OP48 - High Street, South Kyme;

- OP49 - Residential properties – west South Kyme;
- OP50 - Residential properties – northwest South Kyme;
- OP51 - St Mary's and All Saints Church;
- OP52 - Farm on Church Lane;
- OP53 - Farm on Cow Drove
- OP54 - White House Farm;
- OP55 – Gashes Barn

13.5.9 There is currently one operational solar development in the immediate vicinity of the Proposed Development; Grange Farm is located approximately 3.7km to the southwest of the Site. There are several solar farms currently seeking planning consent in the vicinity of the Site. The closest is Heckington Fen, which is another DCO solar application, 3.2km southeast of the Site.

13.5.10 It is not possible to accurately quantify the full level of glint currently experienced by receptors in the vicinity of the Site, as there are a huge variety of sources, wide spread of receptors and some reflections could arise from mobile sources such as moving vehicles. For the purposes of this assessment, it is therefore presumed that no baseline glint currently occurs at these receptors.

Sensitive Receptors

13.5.11 In summary, the key sensitive receptors within the study area comprise:

- Motorists: driving on local roads;
- Railway line: effects for the train driver;
- Aerodromes in the area: pilots and air traffic control; and
- Occupants of residential/commercial properties.

Future Baseline Conditions

13.5.12 The likely evolution of the current baseline without the implementation of the Proposed Development, would be the continuation of agricultural practices.

13.5.13 Overall, the future baseline will broadly reflect that of the current baseline.

13.6 Assessment of Effects

Embedded Mitigation

13.6.1 For this chapter the assumptions are as follows:

- Panels are fixed with a maximum height of 4.5m; and
- Panel angle is 17.5 degrees.

13.6.2 Embedded mitigation will include landscape planting which will help to conceal the Proposed Development from nearby receptors such as roads and dwellings. The extent of planting is subject to further revision as the design evolves but currently the combination of existing and proposed planting provides a high degree of screening around the majority of the site boundary.

13.6.3 Should the embedded mitigation, which is assumed to present from the outset, be found to be insufficient and result in significant effects being assessed, then

additional mitigation will be proposed to try to bring effects back down to acceptable levels. Any residual effects will be reported below.

Assessment of Effects

Construction Phase

- 13.6.4 The construction phase is considered across a number of receptors, separately. These include rail and road receptors, observation points (representative of dwellings in the surrounding area) and aviation receptors.
- 13.6.5 During the initial phase of ground preparation, there is not likely to be any reflections present other than possibly from the windscreens of vehicles used in the site preparation works. It is anticipated that the Site will be constructed sequentially in sections, with one part being built out before the next is commenced. In this way, different sections will help provide screening from ongoing construction activities, providing an element of self-mitigation.
- 13.6.6 Until such time as the panels are installed on the mounting structures, there will be some potential for the mounting structures themselves to reflect sunlight. Since the mounting structures are likely to be made of steel, their reflectivity will most likely be higher than the panels, so there is some chance of glint impacts during this time. The surface area for the mounting structures is considerably smaller than the surface area for the panels and the time between the installation of the mounting structures and the mounting of the panels will be minimised, so any potential impacts will be limited.
- 13.6.7 Numerical modelling of glint effects from the mounting structures has not been undertaken as the computer model is not designed to enable this type of analysis. Any impacts would be short-lived and temporary. If any particular issues are identified during the construction process, temporary screening could be used to mitigate them.
- 13.6.8 Rail receptors are considered to be of high sensitivity. Impacts on rail receptors during the construction phase are assessed as temporary and the magnitude of the impact is not quantifiable but expected to be Low. The overall significance of effect on rail receptors is **minor adverse** to negligible and **Not Significant**.
- 13.6.9 The sensitivity of road receptors is High. During the construction phase, impacts are temporary and the magnitude of the impact is not quantifiable, but likely to be Low. The overall significance of effect on road receptors is **minor adverse** and **Not Significant**.
- 13.6.10 Aviation receptors have High sensitivity. During the construction phase, impacts are assessed as temporary and their magnitude is *Negligible*. The overall significance of effect on aviation receptors is minor adverse to **negligible** and **Not Significant**.
- 13.6.11 Dwelling receptors are considered to have Medium sensitivity as potential impacts pose no health and safety risk but may cause nuisance. During the construction phase, any effects are temporary, but the magnitude of impact is not directly quantifiable. However, it is likely to be Low. The overall significance of effect on dwelling receptors is **negligible** and **Not Significant**.

Operational Phase

- 13.6.12 During the operational phase, impacts will vary during the course of each year as the sun attains different heights in the sky and weather patterns vary.
- 13.6.13 The operational phase is considered across a number of receptors, separately. These include rail and road receptors, observation points (representative of dwellings in the surrounding area) and aviation receptors.
- 13.6.14 A Zone of Theoretical Visibility (ZTV) has been modelled to show which areas potentially have visibility to the panels (See Appendix 13.2). It is important to note, here, that the ZTV is based on a Digital Surface Model (DSM) that introduces surface features into the analysis rather than just using a bare earth model. This is helpful in allowing a better representation of screening. However, it would also mean that it would predict visibility as if receptors were located on top of those surface features, rather than just beside them at ground level. The methodology used to avoid this is described below. In any event, because the ground is so flat in this area, the ZTV suggests that many places around the Site has theoretical line of sight to the panels.
- 13.6.15 The ZTV is a computer model that determines whether any part of the Site is visible from land surrounding the Site based on local topography. In this case, the ZTV is formed using Light Imaging Detection and Ranging (LiDAR) terrain data and accounts for screening from surface obstacles (e.g. trees, hedgerows, and buildings). The ZTV is calculated as described below and is an effective tool used to reduce the study area and eliminate multiple receptors that have no risk of experiencing glint.
- 13.6.16 The Environment Agency (EA) is responsible for the collection of a high-resolution LiDAR dataset, made available through the 'Open Government Licence'. The data is gathered by aircraft equipped with the necessary scanning laser that is used to measure the distance from the aircraft to the obstruction. This produces a 3D image of the earth's surface and accounts for high standing, non-terrain based objects that are not accounted for in Digital Terrain Models (DTMs), which only account for landform. The relevant data produced from this technique is called a Digital Surface Model (DSM). This is useful due to the increased accuracy that can be obtained during the production of a ZTV. Since the 3D profile of the necessary area is known, screening can be accounted for when the ZTV is produced.
- 13.6.17 A selection of sample points are identified on the Site boundary and on land contained within the Site. Sample points are chosen as it is unfeasible to perform this calculation on every surface onsite. The DSM forms the basis for determining whether the Site could be visible at local receptors. The DSM comprises a grid of cells where each cell has a given height value and the GIS allows this data to be displayed graphically.
- 13.6.18 The ZTV produced by the DSM will flag the obstructions themselves (e.g. trees) as having visibility as it assumes the receptor height is added on top of this. Non-terrain objects can be eliminated as receptors using the DSM in tandem with a DTM. The DTM height is subtracted from the DSM and this forms the Canopy Height Model (CHM). Following this, highlighted non-terrain objects that will theoretically have visibility can be manually removed as potential receptors.

13.6.19 Multi-storey receptors may be difficult to assess accurately. It is possible that glint may be received from a certain floor and above, but this would not be picked up by the ZTV that is assessing visibility at a fixed height above ground level and, therefore, requires manual intervention to determine the true extent of the glint within taller buildings.

Where can glint occur?

13.6.20 Glint can only occur when direct sunlight can reach the solar panels. Diffused lighting, caused by weather conditions (e.g. cloud, fog and mist) cannot cause glint due to the low energy intensity of the light incident on the panels.

13.6.21 Figure 13.2 shows the total number of daylight hours available each month (red) based on the regional variation for the Site. Also shown is the average number of hours of sunshine each month (blue) taken from the Meteorological Office data recorded at Waddington (the closest active weather station to the Site for which historic sunshine data is available). Waddington is approximately 21km from the Site and is expected to be broadly representative of the weather conditions that the Site will experience.

13.6.22 Figure 13.2 also shows the ratio of sunshine to daylight displayed as a percentage (green) for each month at the Site. As can be seen, the sunniest month on average was May, with 201 hours of sunshine. Even then, conditions suitable for glint events to occur are only expected to be present approximately 41% of the theoretical maximum. This is because the ratio of sunshine to daylight is approximately 41% at this time. During less sunny months, glint events may occur for as little as 22% of the theoretical maximum because the ratio of sunshine to daylight is much less at these times.

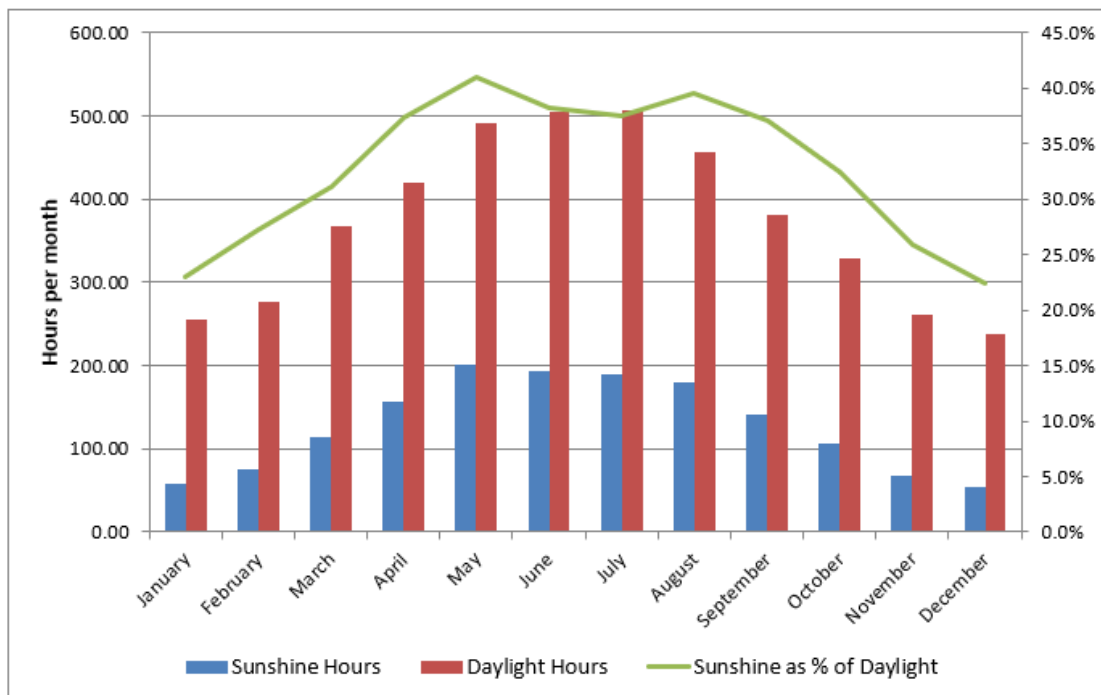


Figure 13.2 – Number of Daylight and Sunshine Hours per Month in Waddington

Railways

- 13.6.23 The main rail receptor runs to the south of the Site, between Sleaford and Heckington, at a distance of approximately 2.4km. It passes to the south of Heckington with most of the track further than 5km away. A small section of the line lies within the 5km buffer and within the ZTV and, as such, has been assessed. For the purpose of the assessment, it is assumed that the driver of the train would be sat at a height 2.75m above ground level. The model, therefore, considers whether glint effects would be observable to the driver and could compromise their ability to safely control the train.



Figure 13.3 – Section of the Railway line track assessed (orange)

- 13.6.24 There is one section of track that has been considered in the glint assessment, as shown in Figure 13.3. The ZTV and 5km site buffer are also shown in this Figure. It should be noted that several lines are more than 5km from the Site and, at this distance, there are not expected to be any Significant glint effects, regardless of the panel specifications being used.

Results for Rail Receptors

- 13.6.25 With fixed solar panels at a height of 4.5m and at 17.5 degrees, there was some glint predicted along the railway line. A total of 8 minutes of yellow glint and 105 minutes of green glint was predicted at the railway, without taking local features into account. At this distance and with the screening present in the form of trees, hedgerows and the Village of Heckington, there will be no glint at the railway.
- 13.6.26 Other railway lines sit at a distance of 8km or more. In reality, at these distances, there will be no visibility due to the low height of the Proposed Development within a relatively flat landscape, which will quickly lead to screening from hedgerows and tree lines. Glint intensity also diminishes with distance, so at larger distances any glint effects would be so weak that they can be ignored.

Roads

- 13.6.27 There are a number of roads within the study area comprising national, regional and local roads. There are no motorways. Motorists are, as a matter of routine, used to driving towards the sun, which provides a much more intense source of light than glint. Modern vehicles are equipped with tinted glazing and sun shading bands at the top of windscreens. Notwithstanding this, roads within the immediate vicinity of the Site have been assessed for glint effects.
- 13.6.28 Stretches of road within the ZTV have been identified and selected for computer simulation. Although the dates and times when glint has the potential to be visible for specific stretches of the road may vary, the results reported are expected to be representative of the road in general. It should be noted that the glint results reported (dates and times) do not account for screening, which will limit or eliminate the potential for glint effects. The results reported should, therefore, be placed in context with the discussion of screening, which is provided for each road. The durations reported are the extents of when glint could be geometrically possible, but glint would not occur continuously during that period.
- 13.6.29 Each road that has been assessed is shown in Appendix 13.3. The roads modelled are those closest to the Site and more likely to receive glint. All the roads modelled are at least partially or completely within the ZTV and within 5km of the Site.

Results for Road Receptors

- 13.6.30 The model predicts yellow glint being visible along a number of the routes. However, it is important to recall that the model does not account for any existing screening features or weather conditions. The durations of theoretical yellow glint (highlighted in yellow) for each road receptor are given in Table 13.3, below.

Table 13.4 Summary and Assessment of Significance for Road Receptors

ROUTE	SCREENING PRESENT	THEORETICAL MINUTES OF GLINT	SITE VISIBILITY	SCREENED MAGNITUDE	SENSITIVITY	SIGNIFICANCE
Route 1 – A17	This route is very well screened from the Site as it is majority lined with trees, hedgerows and other vegetation.	204	Very limited to no visibility	0	Medium	None (Not Significant)
Route 2 – B1395	The B1395, varies with screening as much of it has no hedgerows or vegetation lining the western side of the road, on the side facing the Site. There is some intervening screening in the form of residential properties, farms and farm buildings but there is not continuous, complete screening to the Site. The embedded mitigation includes the planting of perimeter screening which will assist in preventing glint effects.	3,547	No visibility with embedded mitigation in place	0	Medium	Minor to Negligible (Not Significant)
Route 3 – Howell Fen Drove	This road runs to Westmoorland Farm and lines the southern boundary of the Site. The boundary has hedgerows lining the road, with clusters of trees. There are only some gaps in the boundary where there is space to turn vehicles and enter the fields. Some sections have less mature hedgerow but there is little visibility at the height when seated in a vehicle. This road is not a through road and only leads to Westmoorland Farm and to access points into the fields.	8,490	Limited to specific areas on the private	0	Medium	Minor to Negligible (Not Significant)
Route 4 – Heckington Road (south of Howell)	Heckington Road runs north-south to the west of the Site and makes up a section of the site’s western boundary. This section of the route connects the hamlet of Howell to the A17 and the Heckington.	0	Limited to no visibility	0	-	None (Not Significant)
Route 5 – Heckington Road (north of Howell)	This section of the route begins to the north of Howell and runs along the site boundary up to Ewerby Thorpe. Along this section there are breaks in the hedgerow so there is direct visibility to the Site with screening that is not constant across the boundary.	4,415	Partial visibility along some sections	0	Medium	Minor to Negligible (Not Significant)
Route 6 – Thorpe Road	Thorpe Road is to the west of the Site and is near to one section of the western site boundary in Ewerby Thorpe. The section closer to the Site is less screened and has	6,210	Partial visibility along some sections	0	Medium	Minor to Negligible (Not Significant)

	slight visibility of the Site but the western section of the road that is closer to Ewerby has little to no visibility of the Site.					
Route 7 – Lane connected to Thorpe Road	This lane links Thorpe Road, to what becomes Black Drove which leads to the farm in the centre of the Site. This road makes up some of the western and all of the northern boundary of the Site. The western section has visibility into the Site as there is minimal hedgerow or other types of screening. The northern section of the road will only see the backs of the panels	8,657	Partial visibility along some sections. Some sections have no visibility to glint causing panels.	0	Medium	Minor to Negligible (Not Significant)
Route 8 – Field Lane	Field Lane is a road off of Main Street in Ewerby. It is also the location of OP6. The section of the road to the east is only partly screened so there is potential of visibility to the Site.	4,909	Some potential of visibility	0	Medium	Minor to Negligible (Not Significant)
Route 9 – Littleworth Drove	This road is to the south of the Site and connects the A17 and the B1395 through Heckington Fen. The route has various levels of screening due to the presence of residential properties and farms, and trees lining the road. The eastern section of the route has less screening and is surrounded by more open, low-lying lands. There is some potential for visibility to the Site.	2,142	Some potential of visibility	0	Medium	Minor to Negligible (Not Significant)
Route 10 – Star Fen Road	Star Fen Road creates a loop to the north of Littleworth Drive and connects to this road. Again, the screening is varied and is linked to the presence of residential properties and farms and other features. Overall the route is well screened but there are gaps which expose low lying fields that allow small portions of visibility to the Site.	2,001	Limited to no visibility to most of the Site	0	Medium	None (Not Significant)
Route 11 – Church Lane	This lane runs to the east of the Site and connects the church to the village of South Kyme. There is some screening due to the presence of trees and hedgerows.	1,068	Limited visibility	0	Medium	Minor to Negligible (Not Significant)
Route 12 – Cow Drove	This lane runs to the south and southeast of the Site. It becomes a private road leading to White House Farm. There is minimal screening as the surrounding land is flat, low lying with minimal trees or hedgerows.	3,987	Large sections of the Site visible	0	Medium	Minor to Negligible (Not Significant)

** Note, the yellow or green shading of the cell indicates the maximum intensity of glint visible across the whole year. A yellow shaded cell means that the model predicts that that receptor will be capable of receiving some yellow glint. It does not indicate that the full duration shown would all be at this intensity. Further information about the breakdown of glint intensity throughout the year can be found in Appendix 13.3.*

Observation Points

- 13.6.31 Due to the size of the Site it is necessary to consider a large number of observation points around the perimeter of the Proposed Development to properly assess the likely effects.
- 13.6.32 A total of 55 observation point receptors have been identified and assessed for likely glint effects based on the use of the fixed panels. The majority of these observation points represent residential dwellings, although there are a few commercial premises and churches included as well.
- 13.6.33 In many cases, the receptors selected are intended to represent more than one property in the immediate area. Although the levels of screening differ slightly for the different receptors, in general the level of glint recorded will be about the same for those surrounding properties.
- 13.6.34 It is important to understand the level of intervisibility between the receptor and the Site as this will determine whether any glint is able to arrive at the receptor. As shown in Appendix 13.2, nearly all of the 5km buffer around the site boundary falls within the visible area according to the ZTV, but this does not account for the level of surface feature screening present at each receptor.
- 13.6.35 For the fixed panel layout, the glint effects will be visible to the east and west of the Site, when the sun is low in the sky, with a small amount visible to the south. It will not be possible for reflections to reach receptors located towards the north of the panels as the south facing pitches of the arrays will prevent this from happening.
- 13.6.36 Table 13.5 includes commentary on the visibility of the Site from the receptor locations and notes the results of the modelling in terms of the duration and predicted intensity of glint effects (i.e. whether green glint or yellow glint would be present).

Table 13.5 Initial Review of Observation Points

OBSERVATION POINT	SCREENING PRESENT	SITE VISIBILITY	PROCEEDED TO FURTHER ASSESSMENT
OP1 - Westmoorland Farm	This farm complex, which is located at the south-eastern corner of the Site, has woodland vegetation directly to the west, but there is less screening between it and the panels to the north. There is also another complex of farm buildings that would potentially screen the house but would be open to glint themselves.	Yes	Yes
OP2 - Residential properties in Howell	This OP represents the residential dwellings in Howell, which is adjacent to the southwestern corner of the Site. This corner of the Site has minimal screening with low to no hedgerow. However, the houses themselves are screened by trees and vegetation on the individual property's own site. There is limited visibility but slight potential from higher levels.	Limited	Yes
OP3 - The Farm Kitchen and residential property	This cluster of residential properties and commercial site is to the west of the western boundary of the Site in Ewerby Thorpe. There is limited screening around this section of the boundary of the Site so there is likely to be visibility of the panels and at higher levels. The residential properties have some screening in the form of trees and hedgerows, but it is not continuous around the property, so visibility is likely. There is limited visibility on the entrance side of The Farm Kitchen site complex, but the rear of the property has minimal screening and will have visibility to the panels.	Limited	Yes
OP4 - Residential properties in Ewerby Thorpe	The properties to the west of OP3, along Thorpe Road which make up Ewerby Thorpe are well screened and have no visibility to the Site. There are large clusters of trees and thick vegetation that line Thorpe Road, which act as screening to all the residential properties in this area, west of the bend in the road towards the Site.	Limited	No
OP5 - Residential properties Ewerby (east)	Again, along Thorpe Road but further west from the Site towards Ewerby, there are residential properties on both sides of the road with dense vegetation. It is not expected that there will be any visibility to the Site, but there is a small potential from higher levels.	No	No
OP6 – Residential properties Ewerby (north)	This point represents residential properties on Field Lane, which is to the north of Ewerby, off of Main Steet. The properties have thick vegetation to the backs of them providing screening to the Site. There is one isolated property to the north of the track that has limited screening and potentially has visibility to the Site, especially at higher levels.	Limited	Yes
OP7 - Residential properties Ewerby (south)	This point is a dwelling on Main Street and represents residential properties in the south of the village. There is a lot of screening in the area with most of the residential properties surrounded by trees and hedgerow. It is not completely clear in their back garden, the extent of screening but low visibility is expected due to intervening vegetation between the village and the Site.	Limited	No
OP8 - Individual residential property on Asgarby Road, to the south of Ewerby	This property is situated on Asgarby Road and is to the west of the Site. On the property there is an extensive mix of trees, hedgerows and other vegetation providing screening. There is a gap in one section which exposes the house to the road and potentially the Site. It is more likely that the upper levels may have some visibility to the Site, although limited due to the surrounding vegetation.	Limited, potentially from upper floors	Yes

OBSERVATION POINT	SCREENING PRESENT	SITE VISIBILITY	PROCEEDED TO FURTHER ASSESSMENT
OP9 - Boughton	This point represents two properties in Boughton to the southwest of the Site. The road these properties are situated on have very high hedgerows, providing screening to the Site. However the property on the north side of the road does not have as much screening to the back of the property so there is potential for the upper levels to have visibility of the Site.	Yes	Yes
OP10 - Asgarby Road, south of A17	This property is an isolated property to the southwest of the Site and the village of Heckington. The area surrounding the property is covered with extensive vegetation and there is no visibility to the Site.	No	No
OP11 - Property on Sleaford Road, Heckington (west)	This point represents the first property as you head into the village of Heckington when you exit the A17. This area has substantial screening and has no visibility to the Site.	No	No
OP12 - Residential area, Sleaford Road, Heckington (west)	This OP represents a cluster of residential houses within Heckington village, to the west. There is varied screening in the form of the residential properties themselves and the surrounding vegetation. At this area, due to the screening and features present there is no visibility to the Site.	No	No
OP13 - Dwelling at Home Farm	As with the other properties to the west of Heckington, the properties and shops in the centre of Heckington are well screened by the rest of the surrounding features and buildings in the village. There is no visibility to the Site.	No	No
OP14 - Rose Cottage	Like OP12 and OP13, there is a lot of screening present in the form of vegetation and buildings that make up the village. This point represents shops along the main road in Heckington to the east of the village.	No	No
OP15 - East of Heckington, Boston Road	This point is situated in the new build area to the east of the main village centre of Heckington. The area is well screened from the Site and has no visibility to the Site. Even on upper levels, visibility is unlikely due to the screening present and distance to the Site.	No	No
OP16 - Residential properties to the northeast of Heckington	This OP represents residential areas to the northeast of Heckington. Similarly to OP12-15, visibility to the Site is minimal due to the surrounding screening. there is varied screening in the form of hedgerows, trees and thick vegetation clusters. The A17 also is well screened to the north and so this provides additional screening.	No	No
OP17 - Residential properties to the north of centre of Heckington	This receptor represents the residential dwellings to the north of the central part of Heckington village, on the peripheries. There are no other residential properties that act as screening, but there is thick vegetation to the north of the residential properties and along the A17 which runs to the north of the OP.	No	No
OP18 - Residential properties at periphery of Heckington	OP18 represents a similar area to OP17 but to the west where the road begins to become a track that crosses the A17. There is thick screening here and there is limited visibility to the A17 to the north and the Site, which is further north still.	No	No

OBSERVATION POINT	SCREENING PRESENT	SITE VISIBILITY	PROCEEDED TO FURTHER ASSESSMENT
OP19 - Properties in cul-de-sacs in Heckington (north peripheries)	Like OP17 and OP18, this OP represents residential houses at the peripheries to the north of Heckington, to the west of OP17 and 18 in a different complex. Similarly to OP18 there is screening present along both sides of the A17 and vegetation at the backs of the residential properties. There is limited to no visibility of the Site.	No	No
OP20 - Bungalows on Potesgrave Way	This receptor point represents bungalows in the centre of the residential area in Heckington. Most of the properties are bungalows but there is a mix of two- and three-story houses in the area also. Owing to the flat topography, this area is screened well and there is no visibility to the Site.	No	No
OP21 - Pine Warren House and adjacent properties	These properties are to the east of the village of Heckington and overall well screened. Even with gaps in the vegetation surrounding the properties, the hedgerow, trees and vegetation in fields to the north and along the A17 provide a good level of screening and there is no visibility to the Site.	No	No
OP22 - Properties on A17	These properties are situated on both the north and south sides of the A17, to the south of the Site. The properties are well screened as there is several layers of screening including hedgerows, trees and vegetation lying between the cluster of properties and the Site. To the north of the properties there are also other properties and farmsteads which act as screening. There is little to no visibility to the Site.	Limited to none	No
OP23 - The Picnic Bar cafe	This receptor represents a café in a layby off the A17 to the south of the road. The area is well screened as the café is situated in an area with thick vegetation and trees. The café also faces south and acts as screening to customers. There is no visibility to the Site.	Limited	No
OP24 - Heckington MOT Centre	This OP is also situated along the A17 to the south of the ad. It is a mixture of commercial and residential buildings. Although there is not much screening in the form of trees or hedgerows, the buildings themselves act as screening to other parts of the complex and the vegetation in fields to the north provide screening to the Site. Overall there is limited to no visibility of the Site at this distance.	Limited	No
OP25 - Garwick Cafe	Garwick Café is situated in a layby off the A17 to the north of the road. The cluster of buildings that make up the café and adjoining residential area is well screened due to thick tall trees to the rear of the properties, screening the area from visibility to the Site. On either side of the café there are also trees and vegetation present to provide screening to the layby. There is no visibility to the Site.	Limited	No
OP26 - Property to the south of the A17 on Caterplot Road	This OP represents an isolated property to the south of the A17. The property is surrounded by trees and hedgerows and has no visibility of the Site.	No	No
OP27 - Property on Great Hale Drove	Similar to OP26, this property is situated to the south of the A17 and lies isolated, surrounded by fields, with some neighbouring properties nearby. The receptor is well screened and from this distance, there is no visibility of the Site.	Limited	No
OP28 - Garthwest	OP28 is situated on the A17 opposite the junction to the B1395. It is a commercial complex, screened to the road by thick hedgerows and trees. Woodland areas lie either side of the receptor, also providing screening. There is no visibility to the Site.	Limited	No

OBSERVATION POINT	SCREENING PRESENT	SITE VISIBILITY	PROCEEDED TO FURTHER ASSESSMENT
OP29 - Cluster of properties along the B1395	These properties are situated along the B1395 and are the first set of houses as you turn off the A17. They are a fair distance away from the Site, so any visibility is unlikely due to the distance but there is also screening present. The individual houses have their own hedgerows and trees that surround their gardens and between this receptor and the Site, other intervening features such as buildings, houses and farmsteads provide screening to the Site. There is no visibility of the Site.	No	No
OP30 - Residential properties north of cluster	These properties are just to the north of OP29 but are two properties that are slightly isolated and to the east of the road. Both houses are surrounded by hedgerow, providing screening the ground floor level of the properties. There are no hedgerows lining the road, there is vegetation, but it is not at significant growth. There is visibility across fields towards the direction of the Site, but at this distance and due to other fields lined with hedgerows and trees, there is no real visibility to the Site.	No	No
OP31 -Residential property on the B1395	This property is surrounded by screening in the form of hedgerows, trees and vegetation. It lies to the west of the B1395 and so the rear of the house and garden face in the direction of the Site. However, due to the distance and level of screening, visibility will be minimal.	Yes	Yes
OP32 - Cluster of houses on Littleworth Drove	Littleworth Drove Road is off the B1395 and runs roughly east-west to the south of the Site. This area is known as Heckington Fen. This OP represents a cluster of houses at the east section of the road. The houses have varying levels of screening, but all have some form of hedgerow surrounding them. Most screening available caters for the ground floors so there is potential for visibility of the Site from upper levels of the houses. The houses are situated to the north of the road so it is the rear sections of the properties that may have potential views of the Site. There are minimal intervening features in the land between these houses and the Site as the fields are flat and low-lying.	Limited	Yes
OP33 - Vine Cottage, Littleworth Drove	Similar to OP32, this cluster of houses are situated on Littleworth Drove and lie to the west of OP32. Vine Cottage sits on the road, but the adjacent property is set back from the road down a private track. Both properties have vegetation, hedgerows and trees surrounding them and they are unlikely to have visibility to the Site, but there could be glimpses at higher levels.	Limited	Yes
OP34 - Farmstead, Littleworth Drove	This farmstead is situated on the south side of Littleworth Drove and the front of the house faces north. There is not a lot of screening surrounding the property but there are trees and tall, grown hedgerows that lie in fields opposite the house that provide screening to the Site. There is no visibility of the Site	No	No
OP35 - Houses on Littleworth Drove, to the west of Star Fen Road	Both houses, which are situated on both sides of the road are well screened. The gated area and properties to the south of the road have tall trees which line the road, providing screening and so there is no visibility of the Site. The property to the north of the road has a garden with several mature trees and dense hedgerows, providing screening to the Site. There is a small potential that there are glimpses from the rear, upper-level windows in this property, but for the most part, the surrounding vegetation screens the Site from view.	Limited	No

OBSERVATION POINT	SCREENING PRESENT	SITE VISIBILITY	PROCEEDED TO FURTHER ASSESSMENT
OP36 - Court Row Farm, Littleworth Drove	This OP represents Court Row Farm. The area is well screened with dense trees. There are some breaks in the line of trees on the opposite side of the road but there is limited to no visibility of the Site due to hedgerows and trees.	Yes	Yes
OP37 - Paddocks Paws Littleworth Drove	OP37 is also on Littleworth Drove and represents a residential property with a dog grooming business attached. This receptor is well screened due to surrounding trees and vegetation which backs the property. There is no visibility to the Site	No	No
OP38 - Farm, east of Star Fen Road	This receptor represents a farm on the quiet lane of Star Fen Road which runs parallel to the north of Littleworth Drove. There are surrounding trees and vegetation, but it is not continuous at the back of the property which faces the Site so there could be some visibility of the Site.	Limited	Yes
OP39 - Cluster of houses on Star Fen Road	This OP represents several houses on Star Fen Road. One is a bungalow and is surrounded by high hedgerows. It is unlikely that there is any visibility to the Site. Other properties in the cluster are multi story and even with trees and vegetation, there could still be some visibility of the Site from upper floors.	Limited	Yes
OP40 - Barworth Research	This receptor represents Barworth Research centre and the farms that surround it. They lie on Star Fen Road on the section of the road that curves round to the south to link back to Littleworth Drove. The farms and research centre are well screened due to the presence of trees and hedgerows. There is no visibility to the Site	Limited	No
OP41 - Large complex on the B1395	This receptor lies to the east of the road and is set back from the road. The buildings themselves act as screening to other parts of the complex. The residential section of the property is partly screened by thick, tall trees, however there is a gap with low fencing up to the gate into the property. From this distance there is minimal visibility to the Site but there could be glimpses at upper levels.	Limited to none	No
OP42 - Bungalow with farm buildings on the B1395	This bungalow is well screened from the Site as it is surrounded by a wall with vegetation and has farm buildings to the west of it, screening the Site from view. There is no visibility of the Site.	No	No
OP43 - 91 Clay Bank	This receptor represents several houses on Clay Bank road. There is minimal screening and so visibility of the Site is likely, especially at upper levels.	Partially	Yes
OP44 - House and farm on Clay Bank road	This receptor represents an area of Clay Bank road where there is a house to the west of the road and a farm set back from the road along a private track. The farm is well screened and has no visibility of Clay Bank road or the Site. The rear of the property faces in the direction of the Site and although there is some screening in the form of trees and hedgerows, there is likely to be visibility of the Site from upper levels.	Limited	Yes
OP45 - Farm estate on Clay Bank	OP45 represents a large farm estate on Clay Bank road to the south of South Kyme. The estate is set back from the road and is well screened. There is no visibility to the Site.	No	No

OBSERVATION POINT	SCREENING PRESENT	SITE VISIBILITY	PROCEEDED TO FURTHER ASSESSMENT
OP46 - Cluster of residential properties in east South Kyme	This OP represents a cluster of residential properties as you enter South Kyme, it is screened due to the presence of other residential properties and features that make up the village. There is slight visibility to the south section of the Site, but there are hedgerows and vegetation lying in the fields in between. There is possibility of visibility from upper levels of the properties.	Limited	Yes
OP47 - Residential area on Low Road	This receptor is representing the residential area to the south of South Kyme. The area is well screened due to other residential buildings and woodlands to the west of the village. There is no visibility to the Site.	No	No
OP48 - High Street, South Kyme	At this receptor there is mainly a mix of residential properties, some commercial properties and a pub. There is no visibility to the Site due to the presence of the rest of the village, trees, hedgerows and vegetation.	No	No
OP49 - Residential properties – west South Kyme	OP49 represents houses to the west of South Kyme. The area is well screened due to dense trees and hedgerows. There is no visibility to the Site.	No	No
OP50 - Residential properties – northwest South Kyme	This receptor represents properties to the northwest of South Kyme. The area is completely screened by brick walls, vegetation, trees and hedgerow. There is no visibility of the Site.	No	No
OP51 - St Mary's and All Saints Church	This receptor represents St Mary's and All Saints Church which lies to the northwest of South Kyme. There could be some visibility to the Site but there are layers of hedgerows and trees which screen most of the Site	Limited	Yes
OP52 - Farm on Church Lane	This OP is representative of a farmstead on Church Road which is near the St Mary's and All Saints Church. It is surrounded by vegetation, hedgerows and trees which line the River Slea that runs to the south and west of the property. Some sections of the farm property may have visibility to the Site although overall it is well screened.	Limited	Yes
OP53 - Farm on Cow Drove	This receptor represents a farm to the east of the Site, along Cow Drove. The property is well screened from the Site due to the presence of thick woodland to the rear of the property.	Yes	Yes
OP54 - White House Farm	This receptor also represents a farm to the east of the Site, along Cow Drove. It can only be accessed via a private road. It has minimal screening, with the surrounding land as very low lying so visibility of the Site is likely.	Yes	Yes
OP55 – Gashes Barn	In the centre of the northern section of the Site, there is a property surrounded by land. The Site is not fully adjacent to the buildings within the property but does completely surround the Site. There is minimal screening with no woodland or thick trees. There are some hedgerows present around some of the property boundaries, but it is not extensive. Visibility of the proposed panels is likely.	Yes	Yes

- 13.6.37 Glint is only expected in amounts that could have a material impact on receptors at OPs 1, 2, 3, 6, 8, 9, 31-33, 36, 38, 39, 43, 44, 46 and 51-55. As such, computer modelling results will only be considered for these OPs.
- 13.6.38 The level of visibility of the Site from the remaining OPs is not deemed to be high enough for glint to pose a tangible risk to these receptors, so they are dismissed from further assessment.
- 13.6.39 Visibility to the Site could be greater for buildings that have multiple levels. Upper storeys could have greater visibility than ground floor windows, but views from inside buildings will (to some extent) be restricted by walls. Generally, effects from upper storey windows will be lower simply because bedrooms tend to be less frequented during the daylight hours and, in most houses, these rooms will not hold the primary views.
- 13.6.40 The results of the computer modelling are shown in Table 13.6. It should be noted that these results show when glint can occur based on the sun’s path and relative locations of the panels and receptors. No consideration of screening is provided in the results. The presence of such features as trees, hedgerows, buildings, intervening topography and other obstacles will reduce the dates, times and durations when glint is predicted to occur.
- 13.6.41 As shown in Figure 13.1, direct sunshine is only present for approximately 41% of the daylight hours during summer and even less during winter months due to inclement weather. The results shown in Table 13.6 assume it is always sunny and do not account for any variations in local weather conditions.
- 13.6.42 The computer model used is of industry standard, approved and recommended by regulators in the United States and aviation authorities around the world. The model is regularly upgraded to account for technological progression and to improve accuracy. Details of the calculations used by the computer model can be found in Appendix 13.4.

Table 13.6 Modelling Results for Local Properties

OBSERVATION POINT	MAXIMUM ANNUAL DURATION* (MINUTES)	EARLIEST START TIME	LATEST START TIME	EARLIEST START DATE	LATEST FINISH DATE
OP1 - Westmoorland Farm	3,863	18:02	18:56	28/03/2023	14/09/2023
OP2 - Residential properties in Howell	1,513	05:13	05:49	23/04/2023	20/08/2023
OP3 - The Farm Kitchen and residential property	3,576	04:53	06:33	13/03/2023	30/09/2023
OP6 - Residential properties Ewerby (north)	3,024	05:15	06:30	14/03/2023	28/09/2023
OP8 - Individual residential property on Asgarby Road, to the south of Ewerby	2,671	05:31	06:31	14/03/2023	29/09/2023
OP9 – Boughton	512	05:30	05:52	17/05/2023	27/07/2023

OBSERVATION POINT	MAXIMUM ANNUAL DURATION* (MINUTES)	EARLIEST START TIME	LATEST START TIME	EARLIEST START DATE	LATEST FINISH DATE
OP31 - Residential property on the B1395	1,340	18:18	18:53	21/05/2023	23/07/2023
OP32 - Cluster of houses on Littleworth Drove	1,614	18:16	18:53	03/05/2023	18/08/2023
OP33 - Vine Cottage, Littleworth Drove	837	18:16	18:52	14/04/2023	29/08/2023
O36 - Court Row Farm, Littleworth Drove	0	-	-	-	-
OP38 - Farm, east of Star Fen Road	782	18:22	18:53	06/05/2023	06/08/2023
OP39 - Cluster of houses on Star Fen Road	1,123	18:19	18:52	21/04/2023	22/08/2023
OP43 – 92 Clay Bank	2,744	17:43	18:51	18/03/2023	24/09/2023
OP44 - House and farm on Clay Bank road	2,828	17:37	18:39	15/03/2023	27/09/2023
OP46 - Cluster of residential properties in east South Kyme	432	17:35	18:12	15/03/2023	28/09/2023
OP51 – St Mary's and All Saints Church	633	17:35	18:12	14/03/2023	28/09/2023
OP52 – Farm on Church Lane	1,560	17:35	18:35	15/03/2023	28/09/2023
OP53 – Farm on Cow Drove	4,277	17:37	18:52	15/03/2023	27/09/2023
OP54 – White House Farm	4,484	17:46	18:53	21/03/2023	21/09/2023
OP55 – Farm property within the centre of the Site	4,632	05:12	18:55	27/03/2023	15/09/2023

* Note, the yellow or green shading of the cell indicates the maximum intensity of glint visible across the whole year. A yellow shaded cell means that the model predicts that that receptor will be capable of receiving some yellow glint. It does not indicate that the full duration shown would all be at this intensity. Further information about the breakdown of glint intensity throughout the year can be found in Appendix 13.3.

13.6.43 Although the earliest and latest times and dates when glint is expected to occur is reported in Table 13.6, glint would not occur continuously between these periods at a fixed receptor. These represent the limits of when glint effects are predicted.

13.6.44 Table 13.7, below, summarises the magnitude, sensitivity and significance of effects for each OP.

Table 13.7 Significance of each Observation Point

OBSERVATION POINT	THEORETICAL ANNUAL DURATION (MINUTES)	MAGNITUDE AFTER CONSIDERING SCREENING	SENSITIVITY	SIGNIFICANCE
OP1 - Westmoorland Farm	3,863	0	Medium	Minor to Negligible (Not Significant)
OP2 - Residential properties in Howell	1,513	0	Medium	Minor to Negligible (Not Significant)
OP3 - The Farm Kitchen and residential property	3,576	0	Medium	Minor to Negligible (Not Significant)
OP6 - Residential properties Ewerby (north)	3,024	0	Medium	Minor to Negligible (Not Significant)
OP8 - Individual residential property on Asgarby Road, to the south of Ewerby	2,671	0	Medium	Minor to Negligible (Not Significant)
OP9 – Boughton	512	0	Medium	Minor to Negligible (Not Significant)
OP31 - Residential property on the B1395	1,340	0	Medium	Minor to Negligible (Not Significant)
OP32 - Cluster of houses on Littleworth Drove	1,614	0	Medium	Minor to Negligible (Not Significant)
OP33 - Vine Cottage, Littleworth Drove	837	0	Medium	Minor to Negligible (Not Significant)
OP38 - Farm, east of Star Fen Road	782	0	Medium	Minor to Negligible (Not Significant)
OP39 - Cluster of houses on Star Fen Road	1,123	0	Medium	Minor to Negligible (Not Significant)
OP43 – 92 Clay Bank	2,744	0	Medium	Minor to Negligible (Not Significant)
OP44 - House and farm on Clay Bank road	2,828	0	Medium	Minor to Negligible (Not Significant)
OP46 - Cluster of residential properties in east South Kyme	432	0	Medium	Minor to Negligible (Not Significant)
OP51 – St Mary’s and All Saints Church	633	0	Medium	Minor to Negligible (Not Significant)
OP52 – Farm on Church Lane	1,560	0	Medium	Minor to Negligible (Not Significant)
OP53 – Farm on Cow Drove	4,277	0	Medium	Minor to Negligible (Not Significant)
OP54 – White House Farm	4,484	0	Medium	Minor to Negligible (Not Significant)
OP55 – Farm property within the centre of the Site	4,632	0	Medium	Minor to Negligible (Not Significant)

* Note, the yellow or green shading of the cell indicates the maximum intensity of glint visible across the whole year. A yellow shaded cell means that the model predicts that that receptor will be capable of receiving some yellow glint. It does not indicate that the full duration shown would all be at this intensity. Further information about the breakdown of glint intensity throughout the year can be found in Appendix 13.3.

Aviation

- 13.6.45 As noted in Section 13.3 of this Chapter, aviation has been scoped into the assessment. Only the airfields within 15km of the Site are considered in the assessment. These include:
- RAF Coningsby
 - RAF Cranwell
 - Anwick (Old Manor Farm) Airstrip
 - Boston aerodrome
- 13.6.46 The closest major aviation receptor, RAF Coningsby, is located approximately 9.5km to the north of the northern boundary of the Site. The aerodrome is orientated such that the runways are nominally 07 and 25, meaning that flights leaving and landing from either runway will not directly overfly the Site without changing direction. Glint effects have been assessed in the software and no glint is predicted on final approach.
- 13.6.47 RAF Cranwell is located 11.2km to the west of the Site and has two runways, with one orientated so that there could be flights landing and taking off that would travel directly over the Site. Glint effects have been assessed in the software and only low intensity green glint is predicted on the westerly final approach.
- 13.6.48 Anwick (Old Manor Farm) is an airstrip located to the northwest of the Site, approximately 3.1km away. It is a privately owned airstrip that is still in operation and situated by Anwick Garden Centre. Glint effects have been assessed in the software and only low intensity green glint is predicted on final approach.
- 13.6.49 Boston aerodrome is an airstrip located to the southeast of the Site, approximately 14km away. It is a privately owned airstrip that was noted to be scoped in by BBC. Glint effects have been assessed in the software and only low intensity green glint is predicted on final approach.
- 13.6.50 It should also be noted that the FAA has undertaken a policy review in relation to solar farm impacts on aviation receptors and its guidance changed as of May 2021. In the absence of any detailed UK guidance from the CAA in respect of solar PV, the FAA guidance has been adopted as default best practice over the previous eight years.
- 13.6.51 In the updated guidance (FAA 14 CFR Part 77), the FAA has concluded that *“in most cases, the glint and glare from solar energy systems to pilots on final approach is similar to glint and glare pilots routinely experience from water bodies, glass-façade buildings, parking lots, and similar features.”*

Decommissioning Phase

- 13.6.52 The decommissioning process will largely be the exact reverse of the construction process, with activities involving the removal of the site infrastructure piece-by-piece. As panels are removed from the mounting frames, the mounting structures will become more visible again and these will still have potential to reflect glint. It is anticipated that the Site will be decommissioned in sections, with panels being removed from one section,

then the mounting structures, cabling and other site infrastructure being removed before the next section of the Site undergoes the same procedure.

- 13.6.53 Whilst the mounting structures are visible, there is some potential for glint to be reflected back towards receptors, but this will be a temporary effect for a short period of time, so it is not considered necessary to further mitigate against it.
- 13.6.54 Rail receptors (High sensitivity) will experience temporary effects during the decommissioning phase. The magnitude of impact is not quantifiable, but likely to be low. The overall significance of effect on rail receptors is minor adverse and **Not Significant** without mitigation.
- 13.6.55 Road receptors (High sensitivity) will similarly experience temporary effects during the decommissioning phase. Again, the magnitude of impact is not quantifiable, but it is expected to be Low. The overall significance of effect on roads receptors is minor adverse and **Not Significant** without mitigation.
- 13.6.56 For aviation receptors (High sensitivity), impacts will be temporary and the magnitude of impact is Minor to Negligible. The overall significance of effect on aviation receptors is minor adverse and **Not Significant** without mitigation.
- 13.6.57 For dwelling receptors (Medium sensitivity), during the decommissioning phase, impacts will be temporary and the magnitude of impact, whilst not quantifiable, will be Low. The overall significance of effect on dwelling receptors is negligible and **Not Significant** without mitigation.

13.7 Mitigation

- 13.7.1 No additional mitigation is required at this stage.
- 13.7.2 Design work is ongoing for the Proposed Development and opportunities to reduce glint effects through the intelligent selection of design options will be undertaken as part of the iterative design process and incorporated into the glint assessment included as part of the Environmental Statement submitted in support of the DCO Application. This may include choosing different panel heights and angles.

13.8 Residual Effects

- 13.8.1 As no additional mitigation is proposed, the significance of effect conclusions remain unchanged from those reported in section 13.6 above. It is expected that all glint effects can be managed effectively and there will be **no residual effects**

Monitoring

- 13.8.2 No monitoring is required.

13.9 Assessment of Cumulative Effects

Inter-Cumulative Effects

- 13.9.1 As noted in the earlier discussion, there are a number of other sources of reflection within the local environment. These include, but are not limited to, water bodies, windows and car windscreens, metal infrastructure, and agricultural polythene, and other solar farms. In the right conditions, even tarmac and grass can reflect light and cause glare.
- 13.9.2 Owing to the sheer number of reflective surfaces present, it is not possible to assess all of the potential sources of glint in the local environment when considering inter-cumulative effects. However, other solar farms in the vicinity have been assessed.
- 13.9.3 The Planning Inspectorate’s response to the Scoping Request directed the Applicant to consider the cumulative schemes identified in consultation responses received from “*Anglian Water, Boston Borough Council, Lincolnshire County Council, Natural England, North Kesteven District Council and West Lindsey District Council*”. These included a number of neighbouring Development Consent Order (DCO) applications for various developments including NSIP-scale solar projects.
- 13.9.4 The consultation response stated that these proposed developments must be considered in terms of potential cumulative effects, as should Heckington Fen and the 800MW Springwell Solar.
- 13.9.5 Table 13.8 describes the solar farms required to be assessed as stated in the Scoping Opinion and those in close proximity to the Site. Owing to the distance of some of the Nationally Significant Infrastructure Projects (NSIP) sites, they will not be proceeded to further assessment. For example, the sites that West Lindsey District Council identified, namely Cottom Solar, Gate Burton, West Burton and Tillbridge Solar, are all more than 35km from the Site and will therefore not experience cumulative glint and are dismissed from further assessment.

Table 13.8 Cumulative Sites

NO.	NAME OF SCHEME	SIZE	NSIP	LPA	DISTANCE FROM SITE	PROCEEDED TO FURTHER ASSESSMENT?
1	Heckington Fen	400-600MW	Yes	North Kesteven	3.2km	Yes
2	Springwell Solar	800MW	Yes	North Kesteven	11km	No, outside modelling area
3	Cottom Solar ⁹	600MW	Yes	PINS to determine. Falls in administrative areas - Nottinghamshire, Lincolnshire County, Bassetlaw District and West Lindsey	41km	No, due to distance
4	Gate Burton ¹⁰	500MW	Yes	PINS to determine. Falls in administrative areas - Nottinghamshire, Lincolnshire County,	45km	No, due to distance

⁹ [Welcome to Cottam Solar Project - Welcome](#)

¹⁰ [Home - Gate Burton - Low Carbon \(gateburtonenergypark.co.uk\)](#)

NO.	NAME OF SCHEME	SIZE	NSIP	LPA	DISTANCE FROM SITE	PROCEEDED TO FURTHER ASSESSMENT?
				Bassetlaw District and West Lindsey		
5	West Burton ¹¹	480MW	Yes	PINS to determine. Falls in administrative areas - Nottinghamshire, Lincolnshire County, Bassetlaw District and West Lindsey	37km	No, due to distance
6	Tillbridge ¹²	500MW	Yes		46km	No, due to distance
7	Vicarage Drove (B/21/0443)	49.9MW	No	Boston Borough	8km southeast of the Site	No, outside modelling area
8	Land at Little Hale Fen (21/1337/EIASCR) – Screening	49.9MW	No	North Kesteven	7.5km southeast of the Site	No, to the south of all Ops and the Site
9	Land at Ewerby Thorpe (14/1034/EIASCR) – Screening	28MW	No	North Kesteven	-	No, in screening process 2015, no layout plans
10	Land to the North of White Cross Lane (19/0863/FUL) – Approved	32MW	No	North Kesteven	4.2km southwest of Site	No, to the south of all Ops and the Site
11	Grange Farm (12/1242/FUL) – Operational	15MW	No	North Kesteven	3.7km southwest of Site	No, outside modelling area
12	Land South of Gorse Lane, Silk Willoughby (19/0060/FUL) – Approved	20MW	No	North Kesteven	c. 6.5km southwest of Site	No, outside modelling area
13	Land East Of London Road/Stump Cross Hill And West Of Southfields Handley Chase Sleaford NG34 7WE (22/0856/RESM) – pending determination	410 residential dwellings	No	North Kesteven	4.02km	No, outside modelling area
14	Land South Of London Road Sleaford Lincs (20/0363/RESM) - Approved	25 residential dwellings	No	North Kesteven	4.5km	No, outside modelling area
15	Land East Of London Road/Stumpcross Hill And West Of Southfields, Sleaford ('Handley Chase') (21/0669/RESM) – Approved	270 residential dwellings	No	North Kesteven	4.87km	No, outside modelling area

¹¹ [Welcome to West Burton Solar Project - Welcome](#)

¹² [Home Page - Tillbridge Solar](#)

NO.	NAME OF SCHEME	SIZE	NSIP	LPA	DISTANCE FROM SITE	PROCEEDED TO FURTHER ASSESSMENT?
16	Land South Of London Road Sleaford NG34 7TD (21/1068/RESM) – Approved	235 residential dwellings	No	North Kesteven	7.52km	No, outside modelling area

13.9.6 After inspection of each, the sites identified that were greater than 5km away from the proposed Beacon Fen Energy Park were eliminated as, at this distance and given the intervening vegetation present, there are no cumulative glint effects expected. The computer model used can only directly assess cumulative effects for solar sites that are located within 5km of the centre of the proposed Beacon Fen Energy Park, but no effects are predicted for receptors at this distance and, as such, cumulative effects would not exist at these locations.

13.9.7 Some of the cumulative sites include the development of residential properties as they are potentially sites to consider as building regulations could dictate that they have roof-mounted PV. At this stage we acknowledge this is a risk, however there is not sufficient data available for us to reasonably undertake a proportionate assessment of this, and any risk is unlikely to result in significant effects due to (for example) distance, separation and screening.

13.9.8 Heckington Fen was assessed for cumulative effects as it lies within the 5km modellable boundary. Glint from Heckington Fen was predicted at some of the receptors in the computer model, which does not account for vegetation, but the design of that site includes the introduction of screening around the perimeter. As such, no residual glint effects are predicted. As there will be no glint from Heckington Fen, there are no cumulative effects with proposed Beacon Fen Energy Park.

Intra-Cumulative Effects

13.9.1 In combination effects, where effects from glint and other environmental effects collectively affect the same receptor would theoretically be possible in an unmitigated design, but assuming the Site is appropriately screened and given the flat landscape within which it is situated, it should be possible to eradicate almost all glint effects (except possibly from upper storeys windows with views down into the Site).

13.9.2 Intra-cumulative effects are where glint effects and other environmental effects collectively affect the same receptor. For glint to occur, the receptor must have visibility of the panels. There is, therefore, a degree of overlap between the glint assessment and the visual impact assessment. There can be no glint without some degree of visual impact, but it is not the case that all receptors that experience visual impacts will be exposed to glint.

13.9.3 Other intra-cumulative effects would theoretically be possible in an unmitigated design but, assuming the proposed Beacon Fen Energy Park is appropriately screened, and the other environmental effects are also adequately mitigated, there would be little risk of intra-cumulative effects occurring.

13.10 Summary

- 13.10.1 There are a range of other common materials and surfaces likely to cause glint that are already present within the study area. These include, inter alia:
- glass in windows;
 - conservatories or greenhouses;
 - flashes caused by light reflecting off passing vehicles; and
 - calm water.
- 13.10.2 Since it is not possible to assess all reflective materials in the 5km study area due to the sheer number of potential reflective surfaces present, the baseline will assume there is no other glint present.
- 13.10.3 The assessment considered ground and air receptors including residential dwellings, commercial buildings, roads, railway and aviation receptors.
- 13.10.4 During construction phase, for rail and road receptors, the overall significance of effect is **minor adverse** and **Not Significant** without mitigation.
- 13.10.5 For dwelling receptors, the significance of effect is **negligible** and **Not Significant**.
- 13.10.6 For aviation receptors, the significance of effect is **minor adverse** to **negligible**, and **Not Significant**.
- 13.10.7 During the operational phase, effects will vary throughout the year as the sun reaches different heights in the sky and different weather conditions are observed. The ground receptors are selected based on the ZTV.
- 13.10.8 For ground receptors, a mixture of green and yellow glint was predicted at some of the OPs and routes, but with the current levels of screening and future design updates, these effects will be **Not Significant**.
- 13.10.9 For the route receptors, a mixture of green and yellow glint was predicted, but with the current levels of screening and future design updates, these effects will be **Not Significant**.
- 13.10.10 For the Railway, a small amount of yellow glint, but predominantly green glint was predicted. However, the section of the railway assessed is well screened and so the railway will not experience any glint. Therefore, these effects will be **Not Significant**.
- 13.10.11 For aviation receptors, at most low intensity green glint with no potential for temporary afterimage is predicted on final approach to all the runways assessed. This is a minor adverse impact and **Not Significant**.
- 13.10.12 During the decommissioning phase, the effects on rail, road and aviation receptors are assessed as temporary, of high sensitivity and of a magnitude (not quantifiable, but) likely to be low. The overall significance of effect on railway, road and aviation receptors is **minor adverse** and **Not Significant**.
- 13.10.13 For dwellings, during the decommissioning phase, the receptors are assessed as temporary, of medium sensitivity, and of a magnitude (not quantifiable, but) likely to be low. The overall significance of effect on dwelling receptors is **negligible** and **Not Significant**.

- 13.10.14 For this project, design work is ongoing for the Proposed Development and opportunities to reduce glint effects through the intelligent selection of design options will be undertaken alongside further consultation as part of the iterative design process. This may include choosing different panel heights and angles.
- 13.10.15 Furthermore, as the project develops, updates to the design will inform any addition mitigation against glint. This will be considered, as appropriate and discussed within the ES Chapter when it is prepared.
- 13.10.16 With suitable mitigation, it is expected that all glint effects can be managed effectively and there will be no residual effects. No monitoring is required.
- 13.10.17 Of those solar farms that were initially considered for cumulative effects, only Heckington Fen falls within the range able to be modelled in ForgeSolar. As this site has mitigation plans to introduce screening around the perimeter, there will be no visibility to glint causing panels. Therefore, inter-cumulative glint cannot occur.
- 13.10.18 Following the implementation of the embedded mitigation, including screening around the perimeter of the Site, there should not be any glint received at ground-based receptors outside of the Site. Therefore, there should not be any potential for other inter-cumulative glint effects to arise.
- 13.10.19 **It is expected that all glint effects can be managed effectively and there will be no residual effects.**

13.10.1 A summary of the likely significant residual effects of the Proposed Development on the receptors considered within this chapter are summarised in Table 13.9 below.

Table 13.9: Discipline - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance							Impact	Nature	Significance	Mitigation Measures
		I	N	R	C	D	P	L				
Glint												
No Significant Effects												
Key: Geographical Significance: I = International N = National R = Regional C = County D = District P = Parish L = Low to Local Nature: St = Short Term Mt = Medium Term Lt = Long Term R = Reversible Ir = Irreversible												

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