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## BARNSDALE SOLAR PARK

# ENVIRONMENTAL STATEMENT

BANKS

# PREFACE

1.1 This Environmental Statement (ES) has been prepared to accompany an application for consent for Barnsdale Solar Park (the proposed Development). The proposed Development is located on Land to the West of the A656 Barnsdale Road, East of Great Preston, North of Allerton Bywater and South of Kippax and the Application has been submitted by Banks Renewables (Barnsdale Solar Park) Limited to Leeds City Council (LCC).

1.2 This Environmental Statement reports the findings of the Environmental Impact Assessment (EIA).

1.3 The Environmental Statement comprises the following elements:

**Volume 1**

- Non-Technical Summary – providing an overview of the proposal and summarising the findings of the EIA and any key mitigation measures proposed for the scoped in Landscape topic as well as a summary of scoped out topics;
- ES - providing a description of the proposed Development and its potential significant environmental effects 'of scoped in' topics, reporting the findings of the EIA, as well as any proposed mitigation measures and providing other relevant background information;
- Technical Appendices – containing detailed reports and figures to accompany the individual assessments documented in the ES; and
- ES Drawings – drawings and plans relating to individual chapters of the ES.

**Volume 2**

- Landscape & Visual Graphics and Visualisations – containing the figures, illustrations and visualisations which specifically accompany the landscape and visual impact assessment, including photomontages from a range of selected viewpoints;

1.4 In addition, to the ES there are a number of documents relating to topics that have been 'Scoped Out' of the EIA, that accompany the planning application and form part of Volume 1 of the submission, although do not form part of the ES. A list of those topics and associated documents are listed in the table below and a:

| Appendix | Document |
|---|---|
| Appendix A | A.1 Archaeological Desk Based Assessment and Heritage Assessment |
| Appendix B | B.1 Transport Statement |
| Appendix C | C.1 Preliminary Ecology Assessment Report<br>C.2 Ecology Impact Assessment<br>C.3 Draft Landscape and Habitat Management Plan |

| | |
|---|---|
| Appendix D | D.1 Arboricultural Constraints and Opportunities Report |
| Appendix E | E.1 Flood Risk Assessment |
| Appendix F | F.1 Phase 1 Land Contamination Assessment |
| Appendix G | G.1 Agricultural Land Classification |
| Appendix H | H.1 Noise Report |
| Appendix I | I.1 Glint and Glare Assessment |

1.5 The following table sets out a list of drawings included in The Application for which consent is sought:

| Drawing Number | Title | Proposals for which Planning permission is sought |
|---|---|---|
| PA01 | Location Plan | X |
| PA02 | Site Boundary Plan | X |
| PA03 | Site Layout Plan - construction layout | X |
| PA04 | Site Layout Plan - operational layout | X |

1.6 A Planning Statement has been prepared to accompany the Application. This forms part of the Application and is included within Volume 1 of the submission, although does not form part of the ES.

1.7 The Non-Technical Summary is available free of charge from Banks. It will also be available to view/download from the following website: https://www.banksgroup.co.uk/barnsdalesolar

1.8 Whilst we encourage you to view the application online as it is the most sustainable option, CD copies, of the entire set of documentation are also available from Banks at the address below, at a cost of £5 (including postage and packaging):

Banks Renewables
Inkerman House
St John's Road
Meadowfield
Durham
DH7 8XL

Telephone: 0191 3786100

Email: barnsdalesolar@banksgroup.co.uk

1.9 Printed copies of the ES may be purchased at a cost of £250 (including postage and packaging) from Banks at the above address.

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# KEY ABBREVIATIONS

| | |
|---|---|
| AOD | Above Ordnance Datum |
| AONB | Area of Outstanding Natural Beauty |
| Applicant | Banks Renewables (Barnsdale Solar Park) Limited |
| Banks Renewables | Banks Renewables / Banks Renewables (Barnsdale Solar Park) Limited |
| BR | Bridleway |
| CMLI | Chartered Member of the Landscape Institute |
| CMS | Construction Management Statement |
| Council | Leeds City Council |
| COSH | Control of Substances Hazardous to Health |
| DTM | Digital Terrain Model |
| EIA | Environmental Impact Assessment |
| EMP | Environmental Management Plan |
| ES | Environmental Statement |
| FP | Footpath |
| GIS | Geographical Information Systems |
| GLVIA3 | Guidelines for Landscape and Visual Impact Assessment, 3rd Edition |
| GPS | Global Positioning System |
| ha | Hectare |
| HGV | Heavy Goods Vehicle |
| LCC | Leeds City Council |
| LCA | Landscape Character Area |
| LLP | Limited Liability Partnership |
| LVIA | Landscape and Visual Impact Assessment |
| NCA | National Character Area |
| NPPF | National Planning Policy Framework |
| NTS | Non-Technical Summary |
| OS | Ordnance Survey |

| | |
|---|---|
| PRoW | Public Rights of Way |
| SLR | Single Lens Reflex |
| SUDS | Sustainable Urban Drainage System |
| VEM | Visual Envelope Map |
| WA | Wardell Armstrong |
| ZTV | Zone of Theoretical Visibility |
| ZVI | Zone of Visual Influence |

# 1. INTRODUCTION

**SUMMARY**

**This chapter outlines the proposed Development, provides a description of the Site and its surroundings and notes the document structure, provides details about the Applicant and defines the key document terms.**

## INTRODUCTION

1.1 This document forms the Environmental Statement (ES) which accompanies the Application made by Banks Renewables (Barnsdale Solar Park) Limited (hereafter referred to as the Applicant) to Leeds City Council (LCC).

1.2 The Application comprises a solar park, associated infrastructure and upgraded access. A full and detailed description of the proposed Development is set out in Chapter 2 (The Proposed Development) of this ES.

### Site Location

1.3 The location of the proposed Development is on Land to the West of the A656 Barnsdale Road, East of Great Preston, North of Allerton Bywater and South of Kippax and the B6137, as shown on Drawing PA01. The Site is situated within the jurisdiction of Leeds City Council (the Council).

## STRUCTURE OF THE ENVIRONMENTAL STATEMENT

1.4 This ES has been prepared in accordance with The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (hereafter referred to as EIA Regulations).

1.5 The ES consists of 2 volumes and is structured as follows:

### Volume 1

**Table 1.1 Structure of the ES**

| CHAPTER NUMBER | CHAPTER TITLE |
|---|---|
| 1 | Introduction |
| 2 | The Proposed Development |
| 3 | Site Selection, Design Iteration and Consideration of Alternatives |
| 4 | Landscape and Visual Impact |

1.6 The ES also contains:

- A Non-Technical Summary (NTS) which provides a clear, concise and non-technical account of the proposed Development and its associated environmental effects and appropriate mitigation.

- The following supporting plans and drawings:

**Table 1.2 List of Supporting Drawings**

| Drawing Number | Drawing Title |
|---|---|
| Figure 2.1 | Indicative Solar Panel Specification |
| Figure 2.2 | Indicative Access track cross section |
| Figure 2.3 | Indicative Substation/control building layout |
| Figure 2.4 | Indicative Construction compound |
| Figure 2.5 | Indicative Cable Trench Installation Details |
| Figure 2.6 | Indicative Control Building detail |
| Figure 2.7 | Indicative Security fencing detail |
| Figure 2.8 | Indicative Perimeter fencing detail |
| Figure 2.9 | Indicative Proposed CCTV sections |
| Figure 4.1 | Landscape Character Areas |
| Figure 4.2 | Access Routes |
| Figure 4.3 | Designated Areas and Receptors |
| Figure 4.4 | Zone of Theoretical Visibility with Screening and Representative Viewpoint Locations |
| Figure 4.5 | Landscape Mitigation and Enhancement Plan |

1.7 In addition, the following table sets out a list of drawings included in the Application for which consent is sought:

**Table 1.3 List Drawings for which consent is sought**

| Drawing Number | Title |
|---|---|
| PA01 | Location Plan |
| PA02 | Site Boundary Plan |
| PA03 | Site Layout Plan - construction layout |
| PA04 | Site Layout Plan - operational Layout |

1.8 The following Technical Appendices which provide further detail on the assessments carried out in order to complete the ES:

**Table 1.4 List of supporting Technical Appendices**

| ID | Title |
|---|---|
| TA 2.1 | Draft Environmental Management Plan |
| TA 4.1 | Methodology |
| TA 4.2 | Baseline Information |
| TA 4.3 | Summary of Viewpoints |
| TA 4.4 | Visual Assessment |

### Volume 2

1.9 Volume 2 consists of the photomontages, annotated panoramas and annotated single frames that support the Landscape and Visual Impact Assessment (Chapter 4). The contents of Volume 2 is set out in Table 1.6 below.

**Table 1.5 Contents of Volume 2**

| ID | Title |
|---|---|
| 4.6a | Viewpoint 1 - Annotated Panorama 1 |
| 4.6b | Viewpoint 1 - Annotated Panorama 2 |
| 4.7a | Viewpoint 2 - Annotated Panorama 1 |
| 4.7b | Viewpoint 2 - Annotated Panorama 2 |
| 4.8a | Viewpoint 3 - 65.5°HFoV Photomontage (Completion) |
| 4.8b | Viewpoint 3 - 65.5°HFoV Baseline Panorama and Model |
| 4.8c | Viewpoint 3 – 65.5°HFoV Photomontage (+10 years) |
| 4.8d | Viewpoint 3 – 39.6°HFoV Photomontage (Completion) |
| 4.8e | Viewpoint 3 – 39.6°HFoV Photomontage (+10 years) |
| 4.8f | Viewpoint 3 – 27°HFoV Photomontage (Completion) |
| 4.8g | Viewpoint 3 – 27°HFoV Photomontage (+10 years) |
| 4.9 | Viewpoint 4 – Annotated Panorama |
| 4.10a | Viewpoint 5 – 65.5°HFoV Photomontage (Completion) |
| 4.10b | Viewpoint 5 – 65.5°HFoV Baseline Panorama and Model |
| 4.10c | Viewpoint 5 – 65.5°HFoV Photomontage (+10 years) |
| 4.10d | Viewpoint 5 – 39.6°HFoV Photomontage (Completion) |
| 4.10e | Viewpoint 5 – 39.6°HFoV Photomontage (+10 years) |
| 4.10f | Viewpoint 5 – 27°HFoV Photomontage (Completion) |
| 4.10g | Viewpoint 5 – 27°HFoV Photomontage (+10 years) |
| 4.11 | Viewpoint 6 – Annotated Panorama |
| 4.12 | Viewpoint 7 – Annotated Panorama |
| 4.13a | Viewpoint 8 – 65.5°HFoV Photomontage (Completion) |
| 4.13b | Viewpoint 8 – 65.5°HFoV Baseline Panorama and Model |
| 4.13c | Viewpoint 8 – 65.5°HFoV Photomontage (+10 years) |
| 4.13d | Viewpoint 8 – 39.6°HFoV Photomontage (Completion) |
| 4.13e | Viewpoint 8 – 39.6°HFoV Photomontage (+10 years) |
| 4.13f | Viewpoint 8 – 27°HFoV Photomontage (Completion) |
| 4.13g | Viewpoint 8 – 27°HFoV Photomontage (+10 years) |

| | |
|---|---|
| 4.14 | Viewpoint 9 - Annotated Panorama |
| 4.15 | Viewpoint 10 – Annotated Single Frame |
| 4.16 | Viewpoint 11 – Annotated Single Frame |

1.10 The application will be further supported with a Planning Statement and a number of technical documents that relate to 'Scoped Out' topics.

## APPROACH TO ASSESSMENT

1.11 A Scoping Request was submitted to LCC in August 2020 with the Scoping Opinion received on 30 September 2020.

1.12 The extent of the assessments to be carried out was agreed with LCC and other statutory consultees based on feedback from the scoping response and subsequent correspondence with consultees throughout August, September and October 2020 to agree scope and methodology of assessment. This ensured the Applicant undertook the correct level of assessments to consider potentially significant effects.

1.13 Potential significant environmental effects considered to arise from the proposed Development have been studied as part of an iterative design and development process. In line with The EIA Regulations, the ES will present the findings of the EIA, setting out a description of the likely significant effects of the proposed Development on the environment.

1.14 The preparation of the ES has been coordinated by Banks Renewables and detailed assessments of the potential environmental effects of the proposed Development are being undertaken by Wardell Armstrong, Arcus, Pager Power and Soil Environmental Services.

## KEY TERMS

1.15 To ensure clarity and consistency throughout the ES, the following key terms have been used:

- The applicant is: "Banks Renewables (Barnsdale Solar Park) Limited" and is referred to as 'the Applicant';
- The project name is "Barnsdale Solar Park" and is referred to as the "proposed Development" throughout the text;
- The project development area within the red line application boundary is referred to as the "Site";
- The project is located within Leeds City Council which is abbreviated to "LCC";
- The "Application Boundary" is the formal (red line) development boundary of the Site as shown in Drawing PA02; and
- The "study area" is the area over which desk based or field assessments have been undertaken. The study area varies depending on the nature of the potential effects within each discipline, as informed by professional guidance and best practice regarding ES. The study areas all cover the Site

and are explained within the methodology section of the relevant chapters within this ES.

1.23 A list of key abbreviations used within this ES is included at the front of this document.

# 2. THE PROPOSED DEVELOPMENT

**SUMMARY**

**This Chapter outlines the key aspects of the proposed Development. The proposed Development consists of a solar park and associated infrastructure.**

**The infrastructure layout has been developed with consideration of a wide range of constraints including ecology, hydrology, geology, transport, utilities, noise, landscape and visual impacts. The proposed layout for the construction phase is shown on Drawing PA03.**

**The proposed infrastructure layout and construction methodology has been developed a result of an iterative design process taking into consideration findings from technical assessments and the EIA process. Should consent be granted for the proposed Development, the design will be furthered and the Construction Method Statement and Environmental Management Plan updated in line with consultations with LCC.**

## DESCRIPTION OF DEVELOPMENT

2.1 The proposed Development is on land to the West of the A656 Barnsdale Road, East of Great Preston, North of Allerton Bywater and South of Kippax and the B6137.

2.2 The Site is located in the Leeds City Council area.

2.3 The proposed Development comprises the following key elements:

- Solar park comprising:

  Solar panels arranged into rows, also known as strings, and mounted on steel racks pile driven into the ground. These racks will be arranged into areas, with an inverter collection point located in each area. The panels will have a maximum height of 3.55 metres.

- Associated solar panel infrastructure including, but not limited to; foundations, external inverters and concrete inverter pads and hardstanding/set down areas;

- Construction of approximately 2.1km of new access tracks (in addition to the upgrade of approximately 1.2km of existing tracks);

- Upgrading of an existing access junction off Barnsdale Road (A656);

- One control building and substation;

- External 66kv transformer;

- Temporary site compound area for the duration of the construction period. This is assessed for the purposes of the ES but does not form part of the application;

- Perimeter fencing and access gates to solar panel areas;
- Security fencing to compound area;
- Underground electrical cabling and communications cables; and
- Final Commissioning is the date when first exporting to the grid and written confirmation of the date of final commissioning will be provided to the local authority within one calendar month of this date; Consent is for a period from the date of consent until the date occurring 40 years after the final commissioning of the Development.

The total area within the planning application boundary, as demonstrated on Drawing PA02 (Site Boundary Plan), is 87.7 hectares (ha).

## SOLAR PANEL SPECIFICATION

2.4 The proposed Development will have an installed capacity of circa 40MW.

2.5 An indicative solar panel is shown on Figure 2.1. The model of panel will not be known until a manufacturer has been chosen, which is expected to follow a tendering process after receipt of consent. For this reason, the ES is based on preliminary design information for which any changes are expected only to improve the potential environmental effects. For the purposes of this document and the EIA undertaken, panels of the maximum size envisaged have been considered and this maximum parameter is a panel height of 3.55 metres.

2.6 Based upon current industry practice the panels will be manufactured from silicon and glass on a metal backing. Subject to agreement with LCC, the finish and colour of the panels is likely to be dark blue or black.

## INVERTERS

2.7 The indicative inverter block locations have been designed to provide maximum efficiency to the solar development. Within each location will be situated an inverter station, comprising a number of inverters with a transformer unit and equipment box. The details of this arrangement are yet to be defined.

2.8 The ES is based on preliminary design information for which any changes are expected only to improve the potential environmental effects.

## SOLAR PANEL FOUNDATIONS

2.9 It is anticipated that the foundations for the panels will be driven or helical piles. An indicative panel foundation detail is shown on Figure 2.1 of this ES.

2.10 Disturbance of the ground is expected to be minimal and will be carried out in accordance with BS 6031:2009 Code of Practice for Earthworks. Considering the proposed panel foundation method, topsoil stripping will not be required, with minimal impact on the current ground conditions with the exception of increased activity during installation.

2.11 No deep excavations will be required here. Limited excavation strip will be required for the inverter pad foundations, with only topsoil strip and minimal ground preparation

works expected. Excess materials will be retained and used as landscaping around new foundations or other areas of the site. Excavated material will be laid around the inverter pad site and landscaped into the contours of the existing topography and reseeded as required.

2.12 Concrete for the inverter pads will be delivered via concrete trucks, with no requirement for onsite concrete batching.

2.13 Piled foundations will protrude from the ground and will extend beyond the normal ground level to enable connections to the solar panel tables. The foundations will then be landscaped appropriately to the surrounding environment. However, the specific foundation depth will be dependent on the panel type and detailed geotechnical design. Excavated material, if any, will be laid around the panel site, landscaped into the contours of the existing topography and reseeded as required.

## SITE ACCESS AND TRANSPORT

2.14 Appendix B (Transport Statement) details the route and access requirements for the construction, operation and decommissioning of the proposed Development. The construction period would constitute the main requirements for vehicular access to the site. The construction phase will last approximately 6 months. The majority of vehicle movements would result from delivery of the panel components, transformers, and access track, control building and substation construction materials. HGV and construction routes will require access through the A656 to reach the site, with no Abnormal Load Vehicles expected as part of the construction traffic.

2.15 Access to the Site is proposed to be taken from Barnsdale Road. All construction and operational traffic will access the Site via this junction, and it is anticipated that traffic will arrive from both North and South along from the main artery roads of the A1 and M62 respectively.

2.16 The existing entrance junction into the Site is currently used for agriculture. Minor junction upgrade and widening works will be required here, taking into consideration the existing site junction constraints.

2.17 A number of mitigation measures would be implemented via a Construction Traffic Management Plan which would be agreed with the relevant statutory consultee post-consent (should permission be granted). Further details are set out in Appendix B (Transport and Access).

## ONSITE ACCESS TRACKS

2.18 Design of the access track layout has taken the following factors into consideration:

- Site Constraints;
- Ground conditions;
- Topography;
- Panel locations;
- Existing track layout; and,

- Hydrology and hydrogeology.

2.19 A total of 3.3 km of internal access track will be required to provide access during construction, operation and decommissioning. Where possible, existing tracks have been utilised however where existing tracks are not available 2.1km of new access tracks will need to be constructed.

2.20 Resurfacing and upgrading of the existing track will be required to ensure a suitable surface is available. It should be noted that it may be required to widen the existing track at certain locations to allow for passing vehicles and this will be reviewed as part of the detailed design, with any works kept to a minimum.

2.21 It is proposed to install unsealed tracks with appropriate drainage, however, in areas where there is anticipated to be increased traffic i.e. around the site entrance, there will be a section of sealed paved track.

2.22 The proposed track layout has avoided sensitive ecological and hydrological features. With the exclusion of the existing track and watercourse crossing, all new access tracks are located a minimum of 50 m from existing watercourses to reduce the possibility of suspended solids entering the watercourses during construction and operation.

2.23 Access tracks will be installed such that they are not a barrier to natural surface water or groundwater pathways and so that the tracks themselves do not become a conduit for flow.

2.24 The access track layout has been developed based on both the existing topography and track sections and to facilitate the most efficient solar panel arrangement.

2.25 In general, new access tracks will have a running width of up to 4m along straight sections and will be widened at bends as required to accommodate the bending radius of the delivery vehicles. Passing places will be installed at suitable distances depending on the visibility. For typical access track construction, details refer to Figure 2.2.

**Surface Water Drainage**

2.26 Receptors identified within the Site which have the potential to be affected by site drainage include:

- Watercourses and land drains; and
- Groundwater.

2.27 During construction, interception drains will be installed to collect surface water flows before they reach beyond installed infrastructure. These flows will be transferred around the working areas and under the tracks as necessary. Once diverted, the flows will discharge into silt traps, settlement ponds and fences, whichever combination is most applicable, with clean and dirty water flows kept separated. Once through the filtration measures, the water will discharge over ground and will find its way to the nearest watercourse. All new access tracks will have a combination of swales and catch pits either side and cross drains as required. Rainwater falling on the access tracks will be picked up by the swales and discharged via regular breakouts through silt fencing to the natural ground. Surface water from the access tracks will avoid being discharged directly into the watercourses. New connections to existing land drains and

watercourses will be avoided. Solar panels have been designed to discharge any collected runoff into the natural vegetated environment below and maintain the existing runoff characteristics of the site.

**Watercourse Crossing**

2.28 The existing watercourse crossing will require visual assessment throughout the development, with the potential for traffic limits during the construction period.

2.29 No proposed works are planned to be carried out on the watercourse crossing.

## CONTROL BUILDING

2.30 The proposed indicative location of the control building is shown on Figure 2.3 and indicative control building details on Figure 2.6. The control building compound for the proposed Development, including clearance, security, substation, access, storage and fencing etc. will be approximately 40 m x 40 m. Indicative security fencing is detailed on Figure 2.7.

2.31 The structure will be designed in accordance with the mechanical and electrical requirements. It is expected that the compound will require external switchgear to connect at a maximum of 66kV outdoor transformer.

2.32 The control building and adjoining compound will need to house:

- A 66/33 kV outdoor transformer with switchgear and a cable termination and surge arrester on the 66 kV side,
- A control building, likely to contain:
    - Switch room with 33 kV switchboard and protection equipment;
    - Development SCADA control room;
    - WC facilities;
    - Metering; and
    - DNO control and protection room.

## CONSTRUCTION COMPOUND

2.33 As part of the site establishment a temporary construction compound will be installed with an approximate area of 1,500 m², which may include perimeter fencing. Within the boundary of the compound will be the office, parking and welfare facilities for the construction contractor.

2.34 The site will also include a separate temporary lay down area for storage of materials circa 1700 m², which may also include perimeter fencing. The storage area will contain secure containers for the storage of any hazardous materials such as chemicals, hydrocarbons, solvents, and paints required for construction activities. All materials will be stored according to the Control of Substances Hazardous to Health (COSHH) Regulations 2002.

2.35 Excavated sub-soils and top-soils will be stored separately for the duration of the proposed Development in sealed bunds around the temporary construction compound. There is a potential for in-situ soils to become degraded where they are subject to compaction from vehicle and foot traffic and for excavated soils to suffer significant degradation should they be stored inappropriately, making them unusable for agricultural purposes.

2.36 The compound will include facilities for site staff and will require power and water supplies. Power is likely to be supplied using low noise double bunded diesel generators. Water could be transported to site via tankers if required.

2.37 Surface water drainage at the compound will discharge via an appropriately designed oil separator. Foul drainage will discharge to a septic or foul tank and will be removed off-site for disposal at a wastewater treatment plant.

2.38 The temporary construction compound will be removed following completion of the construction works, and the area reinstated to a similar condition prior to commencement, with subsoil and topsoil replaced in the order that they were excavated.

2.39 An indicative construction compound is provided on Figure 2.4 and indicative security fencing is detailed on Figure 2.7.

## SITE FENCING

2.40 There will be requirement for site perimeter fencing around the solar panel areas throughout its operational period. This will be a deer style fence and gates will be installed to allow access via the access tracks. Indicative perimeter fencing is provided in Figure 2.8.

2.41 The site compound and inverter areas will also require security fencing surrounding key external electrical components. Indicative security fencing is provided in Figure 2.7.

## CABLING

2.42 Cabling will be required to link the panels to the control building and the Distribution Network Operator (Northern Powergrid). Cables will be installed within the verges of the access tracks wherever practical. Depths for the cables will depend on ground conditions but in general, will be installed within a trench up to 1.2m deep by 0.9m wide. Details of an indicative cable trench installation is provided on Figure 2.5.

2.43 Where practical, installation of cables will be programmed to avoid periods of heavy rainfall to avoid new trenches being excavated becoming a channel for rainwater. Pumping of water from sumps may be required to control water ingress but the Construction Method Statement (CMS) will be developed in consultation with LCC before construction.

## SITE SIGNAGE

2.44 Appropriate Health & Safety signage will be erected on the Site. There are no public rights of way present within the application boundary. It is suggested that details of such signage can be agreed with the planning authority through an appropriately worded planning condition.

2.45 The signage would comprise of two elements; directional signs and roundels displaying the site speed limit. The directional and speed roundel sign measure 300 mm x 400 mm x 3 mm respectively, which will be mounted on a 2500 mm x 76 mm grey aluminium pole. The poles will be set within 600 mm deep concrete foundation. This will ensure the stability of the signs, in line with current guidance for such installations.

2.46 The sign fixtures allow back-to-back mounting and are used on sign locations where more than two signs are specified. The signs will be hard wearing using tamperproof fixtures, securing the signs in place. A high-quality typeface is used to maximise readability. The signage is uncluttered and designed to be legible from vehicle or from foot.

2.47 The exact number of signs required at any of the post locations will be decided post consent, following a full review of the health and safety requirements.

## GRID CONNECTION

2.48 The grid connection point for the solar park is the existing Ledston substation located on the south east corner of the Site.

## CONSTRUCTION METHOD STATEMENT

2.49 The Construction Method Statement (CMS) will set out in detail the individual items of work associated with the construction of the proposed Development to ensure that works are undertaken in a safe and environmentally sensitive manner. The document will cover the following topics, providing full technical details of the various temporary and permanent components of the proposed Development:

- Site entrance;
- Pre-construction works and track drainage;
- Site access tracks;
- Site fencing and access gates;
- Water crossing;
- Solar panel foundations;
- Control building;
- Cabling and instrumentation; and
- Erection of solar panels.

2.50 Other sections, such as a construction programme and construction working hours will also form part of the CMS. The final CMS will be prepared by the appointed contractor

for the works to satisfy the requirements of the Environmental Management Plan (EMP).

2.51 The EMP is discussed further below and a draft EMP has been prepared for the Development and comprises Technical Appendix 2.1. The final EMP will be agreed post consent / pre-construction with the key consultees.

2.52 In using this method of agreeing on the construction methodology during the post consent/pre-construction stage, the most accurate and realistic method statements can be provided. At a post-consent stage, additional data will be available and the civil engineering contractor and the supply contractor will have been selected, enabling more detailed preparation of individual method statements. During the preparation of the CMS, meetings will be held with key consultees, including LCC, to discuss the working methods proposed.

2.53 The iterative process of preparing the CMS ensures that when construction commences, there is a clear picture of what should happen and the potential risks involved, in order to ensure the monitoring of construction activities is transparent.

**Programme**

2.54 If consent is obtained, a detailed construction programme will be developed by the appointed contractor, which will show the proposed commencement date and provide further consideration of appropriate timings for critical and environmentally sensitive activities. However, it is anticipated that the total length of the construction phase would be approximately 6 months.

2.55 A draft programme for the works is shown in 1 below.

**Table 2.1: Indicative Draft Construction Programme**

| Activity | Start | Finish | Weeks |
|---|---|---|---|
| Site Establishment Works | Month 1 | Month 1 | 2 |
| Pre-construction works and track drainage installation | Month 1 | Month 2 | 4 |
| Solar Farm Construction activities (Access track construction, Control building works, Solar Panel Erection, Control Building Electrical fit out and collector circuits cabling) | Month 2 | Month 5 | 12 |
| Commissioning and tests on completion | Month 6 | Month 6 | 4 |

**Construction Times**

2.56 It is assumed construction will take place between the hours of 7am to 7pm Monday to Friday, 7am to 1pm on Saturday, with no working on Sunday or Bank Holidays. If any work is proposed outside of these times, for example in the delivery of abnormal loads or grid connection, the Contractor will seek prior approval from LCC and local residents would be notified.

## POLLUTION CONTROL PREVENTION MEASURES

### Equipment Storage

2.57 Equipment on site will either be operational or when not required, would be stored within the construction compound.

2.58 A number of vehicles will deliver loads to the proposed Development but will not be stored on site. These include heavy goods vehicles and articulated flatbed trailer lorries carrying panel components, including transformers, structural steelwork, tools, aggregate deliveries, equipment, trucks carrying cabling, steel reinforcement rods for concrete reinforcement and concrete trucks.

2.59 To prevent mud entering the public road system, the wheels of vehicles leaving the site will, where required, be washed either using a manual spray, dry wheel cleaning system or a wheel washing drive-through unit. The entrances to the public highway network would have tarmac laid down to prevent unbound material reaching the public road and posing a hazard to motorists. During the dryer months dust suppression equipment will be used to reduce the impact of dust entering the surrounding environment.

### Cabin / Welfare Facilities

2.60 Due to the requirement for welfare facilities on site, under health and safety legislation, a number of temporary cabins will be required within the construction compound. These will have offices, drying-rooms, toilets, washing facilities and a canteen appropriate for the number of construction workers. The units shall be self-contained, and no discharge of drainage shall be made to the surrounding land unless otherwise agreed with LCC and EA.

### Construction Materials

2.61 A variety of materials are utilised during the construction of solar parks including, but not limited to concrete, reinforcing steel, timber for joinery work and shuttering, crushed rock for road construction, drainage pipes, general construction sundries and electric cables. Wherever possible, materials will be re-used i.e. formwork would be re-used. Suitable excavated rock material to form granular platforms and access tracks will be reused where possible.

2.62 Handling of potentially hazardous materials shall be carried out in accordance with relevant regulations (e.g. COSHH). For example, the preparation of contingency plans, and briefing operatives on the procedure to follow if a spillage occurs shall be covered by the appointed contractor, displayed on-site and contained within the EMP (Technical Appendix 2.1) document prior to construction commencing.

### Fuel and Chemical Storage

2.63 Fuel will be required for the vehicles, generators and other equipment on-site. This would be stored within the temporary construction compound, with storage facilities typically consisting of a lockable, bunded fuel tank and a separate lockable housing for the storage of construction chemicals within a containment bund with 110% storage capacity. In addition to this, there will typically be a wheeled, bunded bowser for the transport of fuel to tracked vehicles away from the construction compound. Drip trays shall be used when refuelling vehicles on the Site. Emergency spill kits shall be kept

adjacent to the fuel storage area and also provided in large items of plant and with the mobile bowser. The contractor shall have an emergency response company on standby in the event of a spillage incident. The bunds and other equipment associated with fuel and oil storage within the construction compound would be removed appropriately, including the deployment of plant nappies, following completion of the construction of the proposed Development.

## ENVIRONMENTAL MANAGEMENT PLAN

2.64 The Environmental Management Plan (EMP) will set out the standards of the environmental performance of the proposed Development. The document will contain a number of objectives for the construction, operational and decommissioning phases which aim to ensure that the Site is constructed, operated and decommissioned in an environmentally acceptable manner, having inherent proposed mitigation to offset or avoid any remaining potential impact during the construction process. A draft EMP has been provided in Technical Appendix 2.1.

2.65 During the construction phase the EMP will cover:

- General management;
- Dust;
- Noise;
- Ecology;
- Surface water management planning (including the storage of oils and fuels);
- Site waste management;
- Soil handling and management

## OPERATIONAL PERIOD

### Operations

2.66 The solar array will be constantly monitored remotely by SCADA with real time data and CCTV. Planned and reactive visits will be made to the project as required. The proposed Development will have negligible planned trip generation during the operational stage, with trips associated with maintenance or cleaning of the site typically requiring 10-20 visits per year.

2.67 Consent is sought for a period from the date of consent until the date occurring 40 years after the final commissioning of the Development.

### Internal Tracks

2.68 All access tracks will remain in place to facilitate operation and maintenance of the proposed Development. Maintenance will be carried out to ensure the tracks remain in a serviceable condition. Maintenance will be prioritised for summer or periods of dry weather. In addition, a proactive stance will be adopted to resolve any problems that may be encountered.

### Surface Water Drainage

2.69 Any temporary drainage measures will be removed, if required following completion of the construction works where appropriate. Any interceptor drains will be removed to return the site to maintain the existing runoff characteristics of the site. Any access track specific drainage would remain and routine maintenance will be carried out to ensure all drains are free from blockages and silt.

### Control Building

2.70 The control building will remain in place for the lifetime of the proposed Development and be removed at decommissioning.

### Site Operation and Maintenance

2.71 The majority of maintenance can be carried out by technicians in a light commercial van or similar vehicle. However, in the case of major component maintenance being required, large vehicles similar to those used during construction may be required to return to site. These will be subject to similar controls as were agreed for the initial construction period.

2.72 All maintenance of any equipment item will be performed according to the Original Equipment Manufacturer's stated schedules and procedures.

### Storage and Use of Potentially Polluting Substances

2.73 Storage of potentially polluting substances at the Site during the operational period would only take place where agreed with the relevant authorities. Generally, substances of this nature would be transported in minimum quantities to the Site on an 'as required' basis i.e. the technicians would only bring what they require for their day's work.

## DECOMMISSIONING PHASE

2.74 The anticipated lifetime of the proposed Development is 40 years after final commissioning. The Applicant will review the status of the development throughout the project's lifetime, taking into account issues such as technological advances and the views of relevant consultees and stakeholders, with the option for decommissioning or re-powering.

2.75 Prior to decommissioning a Decommissioning Method Statement (required by planning condition should consent be granted) will be prepared in consultation with the planning authority and statutory consultees. For the purpose of this ES, it is assumed that decommissioning will take place and will include the following:

- Removal of solar panels and pile foundations;
- Removal of hardstanding areas; and
- Reinstatement of all affected areas.

2.76 At present, it is generally accepted that removal of cables and electrical infrastructure is more damaging than leaving them in situ so currently this is the preferred option. Site access tracks could remain in situ if required by the landowners or be reinstated

subject to agreement with regulatory authorities. The control building and equipment will be removed and the land reinstated.

2.77 Solar modules will be disconnected from the electrical system and removed from the supporting structure with the modules then sent for recycling.

2.78 The module supporting structure will then be dismantled and the supporting mounts will be pulled from the ground by a piling machine, similar to the machine used during construction. The post-grout will be removed with the mounts ensuring no material is left in the ground. Supporting structures will then be re-used or sent for recycling. Only minor backfilling is then necessary to reinstate the area.

2.79 All of this work will take place in parts of the Site already disturbed during construction.

## SOCIO-ECONOMIC AND COMMUNITY INVESTMENT

2.80 Over its lifecycle the proposed Development is expected to require a total investment of circa £25 million. This will comprise of construction contracts, land costs, tenders, maintenance and decommissioning, as well as the investment made to date which includes on-site surveying and production of this application.

2.81 Construction and operational works on the proposed Development will generate ancillary benefits for the local economy through the purchasing of accommodation, food and drink by the workforce.

2.82 Around £20,000 every year will be available for local groups and projects through Banks Community Fund (a total of £800,000 over 40 years).

## SOCIO-ENVIRONMENTAL BENEFITS

2.83 In addition to the socio-economic benefits; the proposed Development will generate the following socio-environmental benefits:

2.84 Contribute to the attainment of the Governments renewable energy targets. The proposed Development, with an estimated installed capacity of 40MW would make a valuable contribution to the Government's energy targets;

a) The proposed Development would generate enough renewable electricity to power circa 12000 households annually

b) The proposed Development is estimated to save 9,364 tonnes per annum or 374,560 tonnes of carbon dioxide over its lifetime.

c) It would contribute to the diversity and security of the UK's energy supply by generating electricity from a sustainable, indigenous resource using a technology that is recognised as amongst the lowest cost forms of generating electricity; and

d) The proposed Development would result in ecological management through measures which will achieve a significant biodiversity net gain on the site well above the expected 10%.

# 3. SITE SELECTION, DESIGN ITERATION & CONSIDERATION OF ALTERNATIVES

**SUMMARY**

**This chapter sets out how and why the design of the proposed Development has changed and details the parameters which have been considered in arriving at an optimal final design for the proposed Development.**

**The iterative design process that has been undertaken is considered to have resulted in a suitable design for the Site which balances the need to maximise the efficiency and output of the solar park with ensuring the environmental impacts remain acceptable overall.**

## INTRODUCTION

3.1 This chapter outlines the methodology and process which was followed to arrive at the design of the proposed Development.

## SITE SELECTION AND CONSIDERATION OF ALTERNATIVES

3.2 When identifying potential sites for a solar park, Banks Renewables seek to identify sites which are not constrained by a range of factors. A suitable grid connection is one of the fundamental issues for a solar park and West Yorkshire was considered to be a suitable area to start a search for solar park sites adjacent to suitably sized grid connections.

3.3 A sieve mapping process of potential areas within West Yorkshire was then undertaken to identify areas that have the potential for solar park development. The constraints used to identify potentially viable solar parks were set out to identify the most suitable sites upon which to focus more detailed site assessment work. A full detailed alternative sites assessment is included as part of the Planning Statement accompanying this Application.

3.4 There are a wide range of potential technical and environmental constraints which need to be taken into account during the potential location and eventual design of a solar energy development. These were considered in detail during the site search process, which culminated in the site being identified as being suitable in planning and environmental terms as well as being capable of being physically developed and supplying electricity on a viable basis to the National Grid. This consideration process is summarised below.

3.5 The site was selected based on consideration of the following criteria:

- Proximity to grid infrastructure and suitable options for grid connection;
- Appropriate topography and slope orientation;
- Located out with national or internationally important landscape designations;

- Located out with national or internationally important ecological designations;
- Located predominantly in Flood Zone 1;
- No designated historical features which would be directly affected;
- Be a suitable distance from dwellings and other sensitive receptors;
- Appropriate access and transport arrangements; and
- Benefit from necessary landowner arrangements and willingness.

## DESIGN EVOLUTION

3.6 The design evolution process for the proposed Development's site design has sought to balance increasing the efficiency of the solar park with ensuring that the environmental impacts remain acceptable.

3.7 The positioning of the solar panels was considered to establish if moving the panels within the site could increase the efficiency of the solar park. It was concluded that the layout (as shown in Drawing PA04 Site Layout Plan - Operational layout was the most efficient in terms of solar panel positioning.

**Design Principles**

3.8 The original design principles sought to:

a) Maximise the generating capacity and efficiency of the solar resource;

b) Achieve acceptable noise levels from the proposed Development at sensitive properties;

c) Reduce adverse landscape and visual effects on local communities and main transport and recreational routes as far as possible;

d) Safeguard the interests of residents living in close proximity to the site and take into account their interests and concerns;

e) Ensure that sensitive habitats, species and sites designated for conservation or historic interest are avoided and impacts minimised where possible;

f) Protect existing trees and hedgerows wherever possible;

g) Avoid areas of flood risk and minimise likely flooding elsewhere.

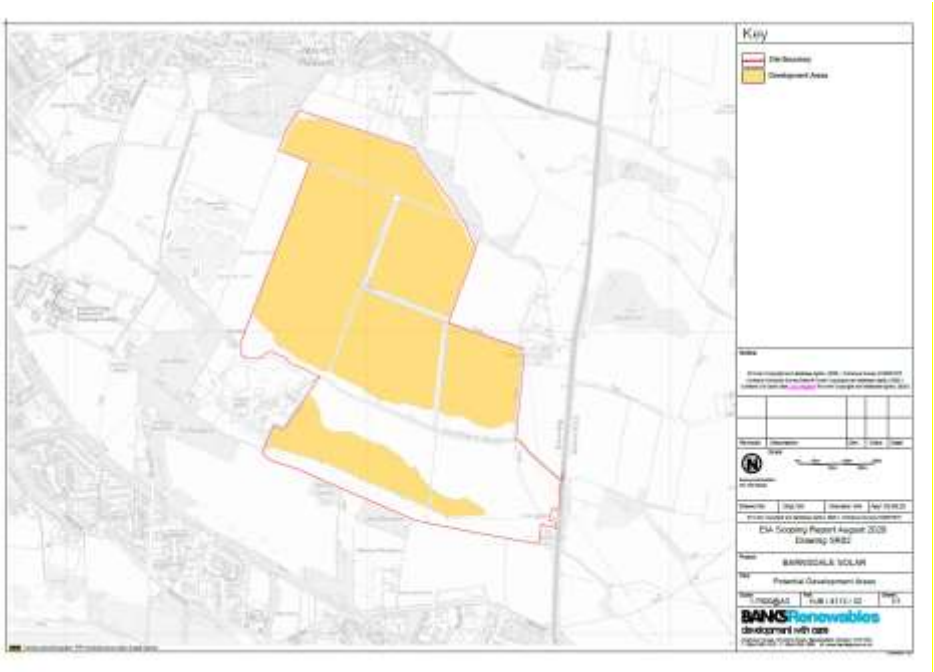
## DESIGN ITERATIONS

3.9 The proposed Development has evolved during the last year in response to emerging constraints and the application of key design principles as a result of liaison with LCC and the outcomes of the various assessments undertaken.

### Initial Proposed Development Area

3.10 The initial proposed Development area included as part of the EIA scoping request consisted of utilising the full extent of the site for solar panels except for land falling within Flood Zone 3. This design iteration was prior to the completion of the various assessments which informed the final scheme design.

**Figure 3.1 Initial Proposed Development**




### Final Design

3.11 Following the completion of all the site assessments and liaison with LCC a number of site constraints were identified. The application of these constraints in addition to the design principles above resulted in the final design:

- 10m buffer from Sheffield Beck to solar panels;
- 10m buffer from hedgerows to solar panels;
- 5m buffer from tree root protection areas to solar panels;
- 30m buffer from badger sett entrances;
- No development within Leeds Habitat Network area;
- 5m buffer either side of water main and sewer crossing the site; and
- 10m buffer from overhead power lines.

## PUBLIC CONSULTATION

3.12 Due to Covid restrictions currently in place it was not considered appropriate to hold public exhibitions in person. Leaflets providing residents with a detailed overview of Barnsdale Solar Park were distributed to around 3000 households within the surrounding communities, inviting them to the view our website and contact the company with questions or comments.

3.13 Sensitive properties surrounding the site have been visited personally and have voiced support for the scheme.

3.14 In addition, details of the proposed Development have been discussed with both Allerton Bywater and Kippax Parish Councils, other community groups and organisations and the Hook Moor Wind Farm Liaison Committee. Full details of community involvement are outlined in the Statement of Community Involvement.

## CONCLUSIONS

3.15 The site selection process and consideration of alternative sites within West Yorkshire has identified this location as the most suitable for a solar park.

3.16 The design of the proposed Development has considered a range of the environmental and technical aspects which are documented within this ES. The submitted design has been carefully chosen following the in-depth technical assessment and the findings of the EIA process.

3.17 The iterative design process that has been undertaken is considered to have resulted in a suitable design for the site which balances the need to maximise the efficiency and output of the solar park and provision of low carbon low cost electricity to the national grid, while ensuring that environmental impacts remain acceptable overall.

# 4. LANDSCAPE AND VISUAL IMPACT ASSESSMENT


**SUMMARY**

This chapter identifies and assesses the likely landscape and visual effects of the proposed solar park at Barnsdale, near Kippax, upon the Site and surrounding area.

The methods of appraisal and conclusions drawn are based on standard industry guidance and the professional judgement of an experienced chartered landscape architect.

The effects on the landscape character of the study area resulting from the proposed solar farm development would not exceed moderate adverse (not significant) and would be confined to the site itself and its immediate surroundings. This is due to the intervening vegetation and built development and undulating topography of the surrounding area. Effects on the wider landscape character of the surrounding areas would also not be prominent and would not exceed slight adverse overall (not significant).

Views of the proposed Development from the range of visual receptors: properties, settlements, users of the transport and rights of way network and recreational receptors have been assessed. The proposed Development would be screened by intervening built development from the majority of the nearby settlements but some significant adverse effects at completion are identified for a small number of properties on the southern edge of Kippax and at Home Farm, to the east of the Site. In the long term, as mitigation planting matures, the level of effects is predicted to reduce to less than significant. Some significant adverse effects at completion of the development are also predicted for users of the permissive footpath between Kippax Meadows and Woodlands Croft, also on the southern edge of Kippax. However, the residual effect would be less than significant as mitigation planting takes effect.

Elsewhere it is not considered that the proposed Development would result in significant adverse effects on nearby visual receptors.

Based on these findings it is also considered that the ability of people to perceive the extent of the Green Belt is not affected by the proposed Development and nor would it result in the perception of coalescence of settlements. Adverse visual effects on the residents of settlements within the study area, where these have the potential to occur, would be limited in extent; therefore, the proposed Development would be largely imperceptible in views from settlements and the perception of the openness of the Green Belt would be maintained.

All reported landscape and visual effects would reduce with time with management of the existing and new boundary hedgerows and tree planting to provide greater screening. The proposed Development has a design life of 40 years, at the end of which it would be decommissioned, and the Site restored to agricultural use.

## STATEMENT OF COMPETENCE

4.1 The Chapter has been written by Adrian Clarke CMLI who has over 14 years of professional experience. Previous landscape planning work has included the preparation of landscape character assessments and landscape and visual impact assessments for various types of development including large projects covered by the Environmental Impact Assessment (EIA) Regulations.

## INTRODUCTION

4.2 The Chapter assesses the potential effects with respect to landscape and visual considerations of the proposed Development (a photovoltaic solar farm with installed capacity of approximately 40 MW) which is located on land to the west of Barnsdale Road, near Allerton Bywater, West Yorkshire. The proposed Development is described in greater detail in Chapter 2 (The Proposed Development). The Site Layout Plan - Operational Layout is shown on planning application Drawing PA04.

4.3 The chapter describes the planning policy framework specific to the LVIA topic area, the assessment methodology, the baseline conditions at the Site and the surrounding area, the likely significant environmental effects of the proposed Development, additional practicable mitigation measures to prevent, reduce or offset any significant adverse effects, and the likely residual effects following the implementation and establishment of mitigation measures and other landscape enhancements.

4.4 The following appendices should be read in conjunction with this Chapter:

- Appendix 4.1: Methodology;
- Appendix 4.2: Baseline information;
- Appendix 4.3: Summary of viewpoints; and
- Appendix 4.4: Detailed visual assessment.

## SCOPE OF ASSESSMENT

### Study Area

4.5 The LVIA considers the Site and its surroundings, encompassing an area within a 5 km radius of the outermost edge of the proposed Development Area, but focused in detail on areas located within 2 km of the Site, where significant effects are most likely to arise. This area has been determined by the topography of the landscape, the presence of intervening physical features and the nature of the proposed Development itself as well as through reference to the Zone of Theoretical Visibility (Figure 4.4) which illustrates the (theoretical) extent of the proposed Development across the surrounding landscape. In visual assessment it is generally considered that observers beyond this distance are unable to perceive detail, although the effect of certain changes, particularly changes to skylines at greater distances may still be perceptible. The assessment has been carried out by means of a process of desk and site survey and analysis of the study area.

## Scoping and Consultation

4.6 In relation to the proposed Development, a request for a scoping opinion was submitted to Leeds City Council (LCC) in August 2020. This was in order to identify the key issues which would need to be considered in the LVIA. The Council's response (30/09/2020) confirmed that an EIA would be required and that an LVIA would be required as part of this process.

**Table 4.1: Scoping Responses**

| Summary of Response | Where & How Addressed |
|---|---|
| Additional viewpoints requested: | |
| • On the footpath connecting Woodlands Crofts/Woodlands View with Kippax Meadows/Apple Tree Lane. | Included as representative Viewpoint 3. |
| • Dwelling/s located on the eastern boundary of the Site, at Home Farm (off Barnsdale Road). | Viewpoint photography from private properties are not included but potential effects are considered in the assessment. |
| • At the substantial gap in the hedgerow along the western edge of Barnsdale Road, just to the north of Low Lodge. | Included as representative Viewpoint 1. |
| • At a gap in the hedgerow adjacent to the footpath running along the Site's southern boundary. | Included as representative Viewpoint 2. |
| • On the foot/cycle path following the ridgeline to the north of Allerton Bywater. | Included as representative Viewpoint 6 |
| • From Kippax Park Fishery. | Viewpoint photography from private properties are not included but potential effects are considered in the assessment. |
| Guidance on landscape requirements of planning applications for proposed development should be followed | Due cognisance has been paid to the guidance, including use of Highland Council Visualisation standards. Extended discussions were carried out with LCC's planning and landscape officers to determine the locations of representative viewpoints, and the methods of visualisation. It was agreed that photomontage visualisations to Highland Council standards would be prepared for three key viewpoints (Viewpoints 3, 5 and 9) with the remaining viewpoints illustrated through the use of annotated photographs of the existing site (to Landscape Institute guidelines). |
| The potential effects on receptors with no theoretical visibility of the proposed development as predicted by the ZTV can be scoped out | Not included. |

## METHODOLOGY

### Overview

4.7 The methodology used in this assessment is described in detail in Appendix 4.1.

4.8 In summary, landscape effects associated with a development relate to changes to the fabric, character and quality of the landscape as a resource and how it is experienced. This requires consideration of the character of the landscape, the elements and features that it contains, and any value attached to the landscape (whether formally or informally).

4.9 Landscape assessment studies:

- direct effects upon specific landscape elements, especially prominent and eye-catching features;
- change in character, which is the distinct, recognisable and consistent pattern of elements that creates distinctiveness and a sense of place;
- subtle effects that contribute towards the experience of intangible characteristics such as tranquillity, wildness and cultural associations; and
- effects on designated landscapes, conservation sites, and other acknowledged special areas of interest.

4.10 Visual effects relate closely to landscape effects, but they concern changes in views and visual amenity. Visual assessment concerns people's perception and response to changes in visual amenity. Effects may result from new landscape elements that cause visual intrusion or new features that obstruct views across the landscape.

4.11 Both landscape and visual effects can be adverse, beneficial or neutral, short, medium or long term, permanent or temporary, reversible or irreversible, direct (an effect that is directly attributable to the proposed Development) or indirect (effects resulting indirectly from the proposed Development as a consequence of the direct effects), and cumulative, relating to additional changes that may arise when the proposed Development is considered in conjunction with other similar developments.

4.12 The methodology for this Landscape and Visual Impact Assessment (LVIA) follows the recommendations and guidance set out in the following reports:

- Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3)[1]; and
- Landscape Character Assessment Guidance[2].

[1] Guidelines for Landscape and Visual Impact Assessment, Third Edition, by the Landscape Institute and Institute of Environmental Management and Assessment (2013)
[2] Landscape Character Assessment Guidance for England and Scotland (2002), Countryside Agency in conjunction with Scottish Natural Heritage
An Approach to Landscape Character Assessment, Natural England (2014)

4.13 The GLVIA3 stresses that the approach to the assessment needs to be proportionate to the scale of the project being assessed and the nature of the likely effects.

4.14 The Landscape Institute produced Advice Note 06/19[3] to advise its members on the use of photography and photomontages in landscape and visual assessment; the photographs in this LVIA have been produced and presented in accordance with this advice. Following discussions with Leeds City Council (referenced above in Table 1.1) it was determined that Highland Council Visualisation Standards[4] (which LCC requires to be used for all large scale infrastructure planning applications) would be used to prepare and present the photomontages used to illustrate views of the proposed Development from the key representative viewpoint locations of Viewpoints 3, 5 and 8.

**Desk Study**

4.15 Desk study has involved mapping and consideration of landscape and visual receptors within the study area using a variety of software tools and data. This has been combined with reviews of published studies relating to landscape character and planning policy. Google Earth and Streetview have also been utilised during the desk study to consider potential visibility of the proposed Development.

**Field Survey (may be combined with desk study if appropriate)**

4.16 Following desk-based study, field investigation has verified the main settlements, dwellings, roads, footpaths, and cycle routes (visual receptors) within the study area from which the proposed Development may potentially be visible. The ZTV indicates that the proposed Development would be visible in theory over a relatively limited area, fieldwork has verified that the Site is largely screened from most receptors by surrounding vegetation and topography.

4.17 As mentioned previously, LCC was consulted regarding viewpoint selection and a list of viewpoints was created along with a record of why each was selected. The locations of the 11 viewpoints are illustrated on Figure 4.4.

4.18 Viewpoints 1 to 11 (Figures 4.6 to 4.16), illustrate the Site in its context of the surrounding landscape and settlements. It is important to note that the viewpoint photographs were all taken when vegetation was in leaf. In winter it is possible that there may be increased visibility of the proposed Development, where views are filtered by vegetation, rather than being screened.

4.19 Viewpoints were chosen initially to represent views in which the proposed Development would in theory be visible, at least in part. However, due to the nature of the topography and anticipated extensive screening by existing tree and hedgerow cover within and surrounding the Site, a small number of representative receptors are included where the proposed Development would not be visible.

**Policy Summary**

4.20 A discussion of the Development Plan documents and planning context in relation to the proposed Development is provided in the Planning Statement which accompanies

[3] Visual representation of development proposals, Landscape Institute Technical Guidance Note 06/19 (17 September 2019)
[4] Visualisation Standards for Wind Energy Developments, The Highland Council, July 2016

this ES. This section summarises national policy and standards, guidance, local policies that are relevant to landscape and visual impact assessment.

*National Planning Policy Context*

4.21 The revised National Planning Policy Framework (NPPF), February 2019, promotes a presumption in favour of sustainable development, providing that it is in accordance with the relevant up-to-date local plan and policies set out in the NPPF. Sustainable development is defined as:

*"…meeting the needs of the present without compromising the ability of future generations to meet their own needs…"*

4.22 Paragraph 20 states that "*Strategic polices should set an overall strategy for the pattern, scale and quality of development, and make sufficient provision for… conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure*…"

4.23 In relation to achieving well-designed places, Paragraph 127 states that "*Planning policies and decisions should ensure that developments… are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities)…*"

4.24 The NPPF also touches upon landscape in relation to Green Belt issues with local planning authorities required to *"…plan positively to enhance their beneficial use, such as looking for opportunities to provide access; to provide opportunities for outdoor sport and recreation; to retain and enhance landscapes, visual amenity and biodiversity; or to improve damaged and derelict land.*"

4.25 Paragraph 170 states that "*Planning policies and decisions should contribute to and enhance the natural and local environment by…protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan)…*"

*Local Planning Policy*

4.26 The main Local Plan policies with relevance to landscape are as follows:

4.27 Policy P10: Design, which seeks to secure good design of new developments and states that "*Developments should respect and enhance existing landscapes, waterscapes, streets, spaces and buildings according to the particular local distinctiveness and wider setting of the place with the intention of contributing positively to place making, quality of life and wellbeing*."

4.28 Policy P12: Landscape, which states that *"The character, quality and biodiversity of Leeds's townscapes and landscapes, including their historical and cultural significance, will be conserved and enhanced to protect their distinctiveness through stewardship and the planning process."*

4.29 Saved UDP Policy N37: Special Landscape Areas, which states that "*In the designated special landscape areas, Development will be acceptable provided it would not seriously harm the character and appearance of the landscape. The siting, design and*

*materials of any development must be sympathetic to its setting and, where necessary, landscaping of the site will be required.*" The proposed Development Area is not part of a Special Landscape Area (SLA) but does lie adjacent to one, the Ledsham / Ledston SLA, which is dominated by the high-quality well-wooded parkland landscape of Ledston Park, which is grade II* listed.

4.30 The whole of the Site is also included within the Leeds Green Belt, which is covered under Saved UDP Policy N32. Whilst not a landscape designation, consideration of the impact of the proposed Development on the Green Belt is touched upon at the end of this assessment.

## BASELINE CONDITIONS

4.31 This section first describes the existing baseline condition of the site and the context of the surrounding area. It is then followed by a review of the published landscape character studies relevant to the proposed Development and study area and the landscape designations and receptors within the study area.

**Site and surrounding area**

4.32 The Site is comprised of a number of large arable fields, divided by hedgerows and tree belts. Sheffield Beck runs through the Site in an east – west direction. There are several larger areas of woodland to the south, south-west and north-east of the Site. Access is from the A656 at Low Lodge adjacent to an electricity substation. Kippax Park Fishery is situated west of the Site boundary and there is sewage works adjacent to the south-west corner of the Site. Adjacent to the north-eastern boundary there are several buildings at Home Farm.

*Landform and drainage*

4.33 The topographical character of the Site varies from north to south. In the southern part of the Site, the land is low lying with a low point around Sheffield Beck of approximately 13 m AOD. The Site rises very slightly to the southern boundary varying between 14m AOD next to the existing electricity substation in the south-west corner, to 25 m AOD in the south-western corner. North of Sheffield Beck the land also rises, gently at first, but then more steeply, reaching a high point of approximately 47m AOD along the northern site boundary. As noted, the Sheffield Beck, a tributary of the River Aire runs through the Site from east – west. A number of ponds are located to the west of the Site at Kippax Park Fishery. Within the wider study area, the major hydrological features are the River Aire, and the adjacent waterbodies, wetlands and canal. The topography of the study area is marked by contract between the valley and the areas of higher ground to the south and north.

*Landcover and Landuse*

4.34 The Site consists of seven large arable fields mostly bounded by hedgerows and tree belts. The Sheffield Beck is also lined with trees. There are a number of areas of woodland surrounding the Site, notably Little Plantation, Whin Covert and Owl Wood to the south of the Site and an unnamed area of woodland at the top fo the slope to the north of the Site. To the west of the Site, there are a number of small waterbodies at Kippax Park Fishery and a small nature reserve to the north-west at Kippax Meadows, which is a mix of scrub, immature woodland and grassland, with public access from Kippax to the north. Within the wider study area, the landscape is a

diverse mix of farmland, woodland, waterbodies, residential and industrial areas, and transportation corridors.

*Settlements and individual properties*

4.35 A small number of properties are located on or close to the Site boundary including Low Lodge (just north of the Site access point) and Home Farm to the north-east of the Site (which includes several properties). Both lie just to the west of the A656 (Barnsdale Road).

4.36 The three closest settlements to the proposed Development are Allerton Bywater (approximately 250 m south at its closest point), Kippax (approximately 100 m north at its closest point), and Great Preston (approximately 1 km west at its closest point). Within the wider study area there are larger settlements both north and south of the Site at Garforth and Castleford respectively, as well as a number of smaller villages including Ledston (approximately 700 m east).

*Transport corridors and rights of way*

4.37 The A656 is the main road running in a north – south direction to the east of the Site, between Castleford and the M1. The B6137 runs west from the A656 to Kippax and through to Garforth. Park Lane runs north-west from the A656 to Allerton Bywater, connecting with Leeds Road and Preston Lane, leading Great Preston. The A1(M) follows the north-eastern to south-eastern edge of the study area with the M1 moving from north to north-west before continuing south-west, also on the edge of the study area.

4.38 Outside the A and B-roads there is a widespread network of minor roads throughout the study area. Closest to Barnsdale Road is Park Lane, which passes from the A656 and joins Leeds Road at Allerton Bywater. Ledston Mill Lane joins Park Lane on the eastern side of the A656 and travels north to the village of Ledston. Brigshaw Lane runs from Preston Lane to Butt Hill in Mount Pleasant and Kippax.

4.39 In addition to the extensive network of minor roads, the area contains numerous footpaths and public rights of way (PRoW) with a number of long-distance footpaths including The Leeds Country Trail, a 62 mile long footpath around Leeds which passes to the west of Kippax and the Trans Pennine Trail which runs through the Lower Aire Valley to the south-west of the Site. There are also several footpaths that are within the 2km detailed study area. Closest to the Site are a footpath that runs to the west of Kippax Park Fishery between Kippax and Allerton Bywater, and a path that runs along the length of the southern site boundary from Park Lane Farm to Owl Wood. A number of National Cycle Network routes also cross the study area including Route 697 which runs along the Kippax Linesway to the south-west of the Site and Route 67 which runs along the River Aire to the west of Mickletown.

*Landscape features*

4.40 The notable positive landscape features within the Site and its immediate surroundings are the tree-lined Sheffield Beck, the boundary hedgerows and trees and the areas of woodland adjacent to the Site, all of which would be retained. The steeply sloping topography towards the northern part of the Site is also a landscape feature, providing views over the surrounding valley.

*Designations*

4.41 Designated areas and receptors are shown on Figure 4.3. Nature conservation and natural heritage designations and areas are shown for information only with potential impacts on flora and fauna discussed in the Preliminary Ecological Appraisal. Cultural heritage designations are also shown for reference, but effects are assessed in a separate Heritage Impact Assessment.

4.42 The ecological designations closest to the Site are Letchmere Pastures Local Nature Reserve (LNR) approximately 0.7km to the south and Townclose Hills Site of Special Scientific Interest (SSSI) and LNR approximately 0.9 km north-west of the Site boundary. Mickletown Ings SSSI is located approximately 1.3 km south-west of the Site and Fairburn and Newton Ings SSSI/LNR is approximately 1 km south-east of the Site.

4.43 The study area contains a number of designated cultural heritage assets with some listed buildings located close to the Site including the Grade II Listed Building at Low Lodge with Associated Gate Piers and Wall (adjacent to the Site entrance), the Grade II listed barn at Home Farm, and the Grade I Listed Building of Ledston Hall with its associated Grade II* listed Park and Garden.

**Landscape Character**

4.44 There are a number of published landscape character studies that are applicable to the 5km radius study area (see Figure 4.1):

- A national study developed as part of the Character of England project and published by the then Countryside Agency in 1999, now Natural England, which characterises England into a number of National Character Areas (NCAs)[5];
- The Leeds Landscape Assessment, which characterises the district of Leeds into 19 character types[6];
- The Landscape Character Assessment of Wakefield District (2004), which characterises the district into six landscape character types[7]; and
- North Yorkshire and York Landscape Characterisation Project[8]

4.45 For the purposes of this assessment the focus will be on areas characterised within the Leeds Landscape Assessment as these areas have the greatest potential to experience significant effects on their character.

[5] https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles
[6] https://www.leeds.gov.uk/planning/conservation-protection-and-heritage/landscape-planning-and-development
[7] http://www.wakefield.gov.uk/Documents/planning/planning-policy/information-monitoring/ldf-landscape-assessment.pdf
[8] https://www.northyorks.gov.uk/describing-and-understanding-our-landscape

4.46 Details of these areas and others are included for reference in Appendix 4.2, with the exception of the North Yorkshire character areas which are not included in this report as they overlap with areas described in the other assessments.

*National Character Areas*

4.47 The Site is located within NCA 30, Southern Magnesian Limestone, but just east of the boundary with NCA 38, Nottinghamshire, Derbyshire and Yorkshire Coalfield.

4.48 NCA 30 Southern Magnesian Limestone extends in a north south direction from Nottinghamshire through north Derbyshire to North Yorkshire. Key characteristics of NCA 30 Southern Magnesian Limestone include:

*Underlying limestone creates and elevated ridge with smoothly rolling landform; river valley cut through the ridge, in places following dramatic gorges. There are also some dry valleys.*

*Fertile, intensively farmed arable land, with large fields bounded by clipped hawthorn hedges, creating a generally large-scale, open landscape.*

*Semi-natural habitats, strongly associated with underlaying limestone geology, include lowland calcareous grassland and limestone scrub on the free-draining upland and gorges with wetland habitats associated with localized springs and watercourse, but all tend to be small and fragmented.*

*Large number of abbeys, country houses and estates with designed gardens and parklands, woodlands, plantations and game coverts.*

*Long views over lowlands to the east and west, and most prominent in the south.*

*Woodlands combining with open arable land to create a wooded farmland landscape in places, where traditionally coppiced woodlands support dormouse populations.*

*Unifying influence of creamy white Magnesian Limestone used as a building material and often combined with red pantile roofing.*

*Localised industrial influences, especially in the Aire and Don valleys, and in the south and along the fringe of the Coal Measures to the west, with former mines and spoil heaps (many now restored), power lines, settlements, industry and transport routes.*

*Influenced by the transport corridor of the A1 which is apparent in an otherwise undisturbed rural countryside.*

*Archaeological evidence, with some notable prehistoric sites, reflects the longstanding importance of the area for occupation and transport.*

4.49 The Site is located just to the east of the boundary to NCA 38, Nottinghamshire, Derbyshire and Yorkshire Coalfield and the study area therefore extends into this NCA. The key characteristics of this NCA are as follows:

*A low-lying landscape of rolling ridges with rounded sandstone escarpments and large rivers running through broad valleys, underlain by Pennine Coal Measures.*

*Local variations in landscape character reflecting variations in underlying geology.*

*Several major rivers flow through the rural and urban areas of the NCA, generally from west to east in broad valleys.*

*A mixed pattern of built-up areas, industrial land, pockets of dereliction and farmed open country.*

*Small, fragmented remnants of pre-industrial landscapes and more recent creation of semi-natural vegetation, including woodlands, river valley habitats and subsidence flashes, with field boundaries of clipped hedges or fences.*

*Many areas affected by urban fringe pressures creating fragmented landscapes, some with a dilapidated character, separated by substantial stretches of intact agricultural land in both arable and pastoral use.*

*A strong cultural identity arising from a history of coal mining, steel making and other heavy industry which resulted from the close relationship between underlaying geology and resource availability, notably waterpower, iron ore and coal.*

4.50 The Countryside Agency and Scottish Natural Heritage's 'Landscape Character Assessment – Guidance for England and Scotland' (The Countryside Agency and Scottish Natural Heritage, 2002) suggests that an appropriate level of hierarchy of landscape character assessment should be selected to provide the right scale and level of detail of information when assessing landscape character. Accordingly, the landscape character areas which provide the most information of the key characteristics of a particular area have been used in the assessment, i.e. the local (Leeds) character areas, rather than the NCAs or regional areas.

*Leeds Landscape Assessment*

4.51 Within the Leeds Landscape Assessment, the landscape is categorised into a total of 19 different Landscape Character Types (LCT). These are areas of countryside which share similar characteristics due to particular combinations of landform and landcover and a consistent and distinct pattern of constituent elements. The same landscape type may occur in different regional character areas but will be distinguished by the broader regional influences of geology, soils and land use history. Urban areas are excluded from the assessment.

4.52 North of the Sheffield Beck, the proposed Development Area lies within the Arable Fringe Farmland LCT. This is characterised as follows:

*It is a landscape of actively farmed land, containing a mixture of landscape influences, all dominated by human activity such as housing, industrial areas, quarries, tips, amenity land, recreation grounds, neglected as disturbed land. The farmland tends to consist of mainly small-scale arable fields, with horticultural crops such as broccoli, rhubarb and potatoes common throughout.*

*Some of the farmland, particularly in the south of Leeds, is under intense public pressure, with urban fringe uses such as caravan storage, scrap yards and horse grazing in pockets of degraded pasture, in evidence. Often the structure of the landscape has, or is starting to break down, with fields being amalgamated and with many hedgerows becoming low cut or gappy. Some of the non-arable areas are well used by the local community for both authorised and unauthorised recreational uses, providing a valuable amenity resource.*

4.53 South of the Sheffield Beck, the proposed Development Area lies within the Degraded River Valley LCT. This is characterised as follows:

*The degraded river valley landscape type can be found in only one landscape unit the Lower Aire Valley (LCM20). It is characterised by an open, broad river valley, with gently sloping sides, leading down into a degraded landscape, dominated by human activity. The valley is covered by a chaotic mix of spoil heaps and lagoons linked to past and present mining activities, major excavations, and industrial buildings.*

*Although most of the area is degraded, intact isolated pockets of arable farmland still occur alongside areas of parkland. The degraded river valley is a continually changing landscape, with new areas of restored land and wetland areas forming increasingly attractive features as they develop. The valley forms a major communication corridor, with lines of pylons, roads and canals clearly evident.*

4.54 The Wooded Farmland LCT partially borders the eastern site boundary (south of Home Farm) but mostly lies to the east of Barnsdale Road. It is characterised as follows:

*The wooded farmland landscape type occurs mainly within the Eastern Limestone Belt and can be found in four landscape units: Methley Park (LCM17); West Bramham (ELB5); Aberford (ELB6); and Ledsham to Lotherton (ELB7). It forms gently rolling or undulating areas of large-scale arable farmland characterised by large blocks of mixed woodland. Many of these woodland blocks are sharp edged and regular in shape, forming part of old and existing estate holdings.*

*In contrast, strips of semi-natural woodland form attractive, softer features along valley becks. Both these types of woodland help create a well wooded horizon when the area is viewed from within. Pockets of pasture occur around some of the settlements and around large houses, but the open arable fields predominate.*

*These tend to be bordered by low gappy hedgerows, with only occasional hedgerow trees breaking up the simple pattern. Small rural villages and isolated, generally large farm buildings lie scattered within these areas.*

4.55 Landscape units are discrete geographical areas of relatively uniform character, which fall within one or the other of the landscape types. In one regional character area, the same landscape type may occur in a number of different landscape units. Within the Leeds District, 45 landscape units have been identified.

4.56 The northern part of the Site lies within the Kippax and Swillington Fringe landscape unit (LCM 4). Its key characteristics are described as follows:

- Gently undulating fringe farmland;
- Large open arable fields on high ground;
- Smaller fields of horse pasture;
- Strip woodland along becks;
- Small wooded copses;
- Low gappy hedgerows;

- Landfill and quarrying activities; and
- Views over the Lower Aire Valley.

4.57 Similarly, the southern part of the Site (south of Sheffield Beck) lies in the Lower Aire landscape unit (LCM 20). Its key characteristics are described as follows:

- Broad river valley;
- Degraded, despoiled and restored land;
- Extraction works and industrial buildings;
- Remnant parkland areas;
- Major river and canal and wetlands;
- Pockets of intact arable land;
- Featureless regular restored arable fields; and
- Power station cooling towers.

4.58 To the east of the Site the landscape lies within the Ledsham to Lotherton landscape unit (ELB 7). Its key characteristics are described as follows:

- Gently rolling wooded farmland;
- Parkland estates;
- Large regular arable fields;
- Mixed plantations;
- Beech avenues;
- Semi-natural woodland along becks;
- Isolated strips of pasture along becks; and
- Views over the Lower Aire Valley.

4.59 To the south-west of the Site and beyond the River Aire, there is an area of Wooded Farmland lying within the Methley Park landscape unit (LCM 17). The ZTV (shown in Figure 4.4) indicates that theoretical visibility of the proposed Development would be very limited. Whilst a description of this area is included in Appendix 4.2 for reference, it is not included in the assessment as significant effects on landscape character are not predicted.

4.60 Landscape units to the north of the proposed Development are not described in the baseline as they lie outside the ZTV. These areas are ELB 1 (East Garforth) and LCM 15 (Barwick to Garforth), ELB 6 (Aberford), LCM 10 (Temple Newsam) and LCM 3 (East Leeds).

4.61 There is a total of three Wakefield Landscape Character Types found within the study area all to the south of the River Aire. These are the Calder Valley, Limestone Escarpment and Northern Coalfield LCTs. The ZTV indicates that theoretical visibility of visibility of the proposed Development would be very limited. Fieldwork (as illustrated at representative Viewpoints 10 and 11) confirmed that actual visibility of the Site is very limited. A description of these areas is included in Appendix 4.2 for reference, but they are not included in the assessment as significant effects on landscape character are not predicted.

4.62 A small part of the landscape on the eastern edge of the study area shown on Figure 4.1 but not within any character areas lies within Selby District, which is covered by a 2019 Landscape Character Assessment[9]. However, since it lies outside the ZTV of the proposed Development it is not included in the baseline or in the assessment.

*Landscape value*

4.63 The value of the Site and its surroundings is considered to be medium – low. Referring to Table 1.3 in Appendix 4.1, the Site is in reasonably good condition and has some scenic value due to the topographical variety and tree cover. At the same time there is also some scope for enhancement through mitigation measures employed as part of the development. There are also features which may be considered to detract from the landscape including the A656, overhead power lines and substation, and sewage works. The wider area also has some scenic value that is likely to be valued locally, primarily on account of the views over the River Aire valley from the elevated land to the north of the Site. However, referring to NPPF Paragraph 170, and with reference to the landscape character assessment, it is considered that the area of the Site and its immediate surroundings does not constitute a "valued landscape". In general, it may be considered that where the landscape value is judged to be medium – low that there is some capacity to accommodate a development of the type proposed. This is discussed more fully in the assessment of landscape effects.

**Baseline Visibility**

4.64 The analysis of the ZTV (Figure 4.4) is the starting point in the process of determining the visibility of a proposed Development in the surrounding landscape, through which the identification of the direct and indirect impacts of the proposed Development on the wider landscape and visual resources within the study area is established. The methodology of the ZTV is described in Appendix 4.1. This is then combined with fieldwork to 'ground-truth' the ZTV and confirm visibility of the existing site. Consideration of the ZTV suggested a number of potential locations for representative viewpoints. This list of potential locations was amended and refined following fieldwork and through consultation with the local planning authority, resulting in the following 11 viewpoints described below in Table 4.2 being used for the assessment.

[9] https://www.selby.gov.uk/landscape-character-assessments

**Table 4.2: Representative Viewpoints**

| Viewpoint | | Grid Reference (approx.) | Receptor Type – Main Selection Criteria | Distance to Site (km approx.) | Elevation (m AOD approx.) | Direction to Site (approx.) |
|---|---|---|---|---|---|---|
| 1 | Barnsdale Road | 442640, 428454 | Road users on main road running past site, large number of receptors | Adjacent | 15 | West |
| 2 | Non-definitive footpath on southern boundary | 442178, 428373 | Recreational users on non-definitive footpath adjacent to site boundary, used by local residents for dog-walking, etc. | Adjacent | 15 | North |
| 3 | Footpath between Kippax Meadows and Woodlands Croft | 441934, 429848 | Recreational users on footpath on settlement edge, used by local residents for dog-walking, etc. Elevated, panoramic view over surrounding lowlands | 0.15 | 67 | East |
| 4 | Footpath in Kippax Meadows | 441556, 429783 | Recreational users in adjacent nature reserve, used by local residents | 0.2 | 29 | South-east |
| 5 | Park Lane Playground | 442445, 428101 | Residents (adjacent) and recreational users, road users (glimpsed), location on settlement edge of Allerton Bywater | 0.23 | 17 | North |
| 6 | Kippax Linesway | 441698, 428213 | Recreational users of bridleway and cyclists on National Cycle Network Route 697 | 0.24 | 18 | North |
| 7 | Green Lane | 443040, 428699 | Recreational users of bridleway crossing countryside between A656 (Barnsdale Road) and Ledston | 0.44 | 15 | West |
| 8 | Footpath between Station Lane and Brigshaw Lane, known as The Trod | 440705. 429388 | Recreational users of footpath, well-used by local residents and school children walking to and from Brigshaw High School | 0.84 | 34 | East |
| 9 | Hall Lane, Ledston | 443514, 428751 | Residents (adjacent), road users, pedestrians, view from residential area within Ledston | 1.0 | 45 | West |
| 10 | PRoW on south bank of River Calder | 441410, 426083 | Recreational users of footpath, local residents, view from area of lower lying land within river valley | 2.44 | 12 | North |
| 11 | Agricultural land north of Castleford | 445012, 426193 | Recreational users on edge of Castleford, view from elevated ground in southern part of study area, used by local residents | 3.21 | 50 | North-west |

4.65 Visibility of the existing site from the surrounding area is as follows:

- To the north, there is generally no visibility of the Site due to topography and screening by buildings and vegetation, apart from limited areas immediately adjacent to the Site boundary, as illustrated by Viewpoint 3 (Figure 4.8b). Elsewhere the Site is screened by vegetation as illustrated by Viewpoint 4 (Figure 4.9).

- To the west, visibility is mainly limited to a small number of locations within 2 km, where the landscape is more elevated and provides a view across to the Site. This includes Brigshaw Lane and some residential areas on the eastern side of Great Preston, as illustrated by Viewpoint 8 (Figure 4.13b).

- To the south, there is some visibility of the Site from the footpath immediately adjacent to the boundary as well as slightly further away along Park Lane. There is also limited visibility from parts of Kippax Linesway, which is elevated above the surrounding landscape on an embankment. These views are illustrated by Viewpoints 2, 5 and 6 respectively (Figures 4.7a & 4.7b, 4.10b, and 4.11). Viewpoints 2 and 5 are also representative of the type of view which might be obtained from Site HG3-20 which is allocated in the Local Plan for Leeds as a designated site to be safeguarded from development during the plan period (to 2028)[10]. There are also some more distant but limited views of a small part of the Site (the more elevated part on the northern boundary) from further afield. These include the flat, relatively open landscape bordering the River Calder and elevated land on the northern side of Castleford. These views are illustrated by Viewpoints 10 and 11 respectively (Figures 4.15 and 4.16).

- To the east of the Site, there is limited visibility from higher ground around Ledston and also glimpses through gaps in roadside vegetation on the A656. These views are illustrated by Viewpoints 9 and 1 respectively (Figures 4.14 and 4.6a and 4.6b). Elsewhere the Site is screened by vegetation as illustrated by Viewpoint 7 (Figure 4.12).

**Modifying Influences**

4.66 Under a 'no development' scenario, the Site would continue to be cultivated as agricultural land. Boundary vegetation, tree belts and surrounding vegetation would continue to grow, and be subject to ongoing management.

4.67 Alternative development scenarios might also form a part of any future baseline, but it is not possible to factor these into any comparison of potential effects, given that the details of such scenarios are unknown.

**Information Gaps**

4.68 No notable information gaps were identified when obtaining data for this assessment.

[10] See the Adopted Plan – Outer South East HMCA document available online at Adopted Plan - Outer South East HMCA (leeds.gov.uk). There is also currently a pending planning application for Site HG3-20 (ref. 18/01446/OT) and potential impacts on future residents (should the application be approved) are discussed in the assessment of effects.

### Assumptions and Limitations

4.69 In undertaking the assessment of landscape and visual effects of the proposed development, the following assumptions have been made:

- The establishment and growth rates for the landscape mitigation proposals and new tree planting are based on an assumed growth rate in height of approximately 300mm per year, subject to soil, stock, and climatic conditions; and

- The implementation of the landscape proposals will be phased and implemented as part of the construction works of the phase it relates to.

4.70 There are a number of constraints and limitations that affect the outputs of this assessment, including:

- The baseline assessment has been based on information readily available at the time of undertaking the assessment; and

- During site visits, weather conditions, the time of day and seasonal factors have influenced the visual assessment and photographic record of the Site and surrounding landscape. Every effort has been made to ensure that the photographs and their locations are representative of the Site and its surroundings.

4.71 It is not possible to enter the curtilage of private residential properties and access to assess the visual effects from private individual residential properties has not been obtained (with the exception of Ledston Hall, which is considered in the Heritage Impact Assessment). As a result, the assessment of likely visual effects on such receptors has been undertaken from vantage points and representative views captured from nearby publicly accessible locations.

4.72 It is assumed that that information provided by third parties, including publicly available information and databases, is correct at the time of their provision.

## PREDICTING AND ASSESSING IMPACTS & POTENTIAL EFFECTS

4.73 This section of the LVIA considers the effects of the proposed Development on landscape features, landscape character, and visual amenity. It considers the effects of the proposed Development, during construction, operation and decommissioning after 40 years.

4.74 Effects during construction and decommissioning are considered to be temporary. Effects associated with the operational phase of the proposed Development are considered to be long term, reversible effects. Table 4.3 summarises the potential impacts of elements of the proposed Development.

**Table 4.3: Summary of potential impacts of aspects of the proposed Development**

| Aspect of the development | Potential change |
|---|---|
| **Construction Phase** | |
| Construction vehicle movement | Physical characteristics: not affected |
| | Perceptual characteristics: Increase in activity for short time but unlikely to result in any notable reduction in tranquillity which is already affected by proximity to the A656. |
| Construction of access track and installation of solar panels, inverter cabins and associated development | Physical characteristics: loss of small amount of land and introduction of additional elements in pattern but existing field patterns retained. |
| | Perceptual characteristics: temporary reduction in tranquillity but unlikely to be readily noticeable as the Site is already affected by proximity to the A656. |
| Storage areas including compound with stockpiles of materials | Physical characteristics: potentially incongruous elements contained within existing pattern. |
| | Perceptual characteristics: Stockpiles are unlikely to be readily perceived from surrounding area due to screening by vegetation. |
| Construction of the grid connection | Physical characteristics: temporary change of linear routes of land while installing underground cables |
| | Perceptual characteristics: temporary reduction in tranquillity but unlikely to be readily noticeable as the Site is already affected by proximity to the A656. |
| **Operational Phase** | |
| Operational solar PV panels | Physical characteristics: introduction of a new static structures making a new pattern. |
| | Perceptual characteristics: potential localised effect on character of Site but panels largely screened from surrounding landscape. |
| Land use change to Project | Physical characteristics: small loss of elements and no change to existing pattern of fields and field boundaries, pattern of solar PV panels adding to existing patterns within site, scale not affected. |
| | Perceptual characteristics: effect upon naturalness but tranquillity of Site already affected by presence of nearby roads and views of large-scale infrastructure (overhead lines) and buildings and structures in surrounding areas. |
| Operational use of access track | Physical characteristics: no loss of elements and existing pattern, scale not affected. |
| | Perceptual characteristics: unlikely to be readily noticeable. |
| Grid connection | Physical characteristics: the cables would be underground and follow the route of the access track therefore once the ground cover is restored there would be no impacts |

| | |
|---|---|
| | Perceptual characteristics: the cables would be underground therefore once the ground cover is restored there would be no impacts |
| **Decommissioning Phase** | |
| Decommissioning vehicle movement | Physical characteristics: not affected |
| | Perceptual characteristics: Increase in activity for short time but unlikely to result in any notable reduction in tranquillity which is already affected by proximity to the A656. |
| Removal of solar PV panels | Physical characteristics: restoration of small amount of land and removal of elements in pattern but existing broader patterns retained |
| | Perceptual characteristics: potential restoration of naturalness |

**Assessment of Potential Landscape Effects during Construction Phase**

4.75 The anticipated construction period for the proposed Development would be approximately 6 months, therefore short term. The construction would affect both the physical characteristics of the Site, such as the land use and land cover, as well as perceptual characteristics such as tranquillity.

4.76 Some indirect impacts on the wider area would arise from the visual impacts associated with the construction works. However, during this time, most impacts of the construction activities on the landscape character of the Site and the immediately surrounding area would be of a highly localised nature and therefore, assessed as slight adverse (not significant).

4.77 Once the construction elements are removed, the additional temporary disturbance would cease.

**Assessment of Potential Landscape Effects during Operational Phase**

4.78 Landscape effects during operation would result from the presence of the solar panels in the landscape and indirect effects on the wider area arising from the perceptibility of the proposed Development. Such effects arise in the main from potential contrasts in colour of the proposed Development, when viewed against a landscape backdrop, and the addition of the strong pattern created by the rows of panels. The proposals are low level and are unlikely to be seen against the skyline, with no strong contrast therefore between the panels and the sky.

*Effects on the Character of the Site*

4.79 The potential effects of the proposed Development are summarised earlier in this report in Table 1.2. The Site is considered to be medium – low in value as, while it is in reasonably good condition, it is undesignated and localised modification of the character has resulted from the adjacent A-road, together with views of overhead power lines and adjacent built-up residential areas. The topography of the Site, land use and land cover, and the fact that it is reasonably well-screened by surrounding vegetation means that it has a medium - low susceptibility to change of the type associated with proposed Development. It is therefore considered to be of medium – low sensitivity.

4.80 The magnitude of effects on the character of the site is assessed as medium as the introduction of the proposed Development would be prominent only within the immediate locality of the site itself. The retention of the trees and hedgerows within and adjacent to the site would mean that key perceptual characteristics of the Site would remain. The development would introduce an additional land use, with the farmland inside the site including that surrounding the panels and structures being converted to grassland and continuing to be managed as agricultural land through grazing or cutting. Furthermore, whilst the effects are long-term they would be reversible and, following reinstatement of the ground around the arrays, the land would continue to be managed as an agricultural landscape. The overall effect of the introduction of the proposed Development on the landscape character of the site is therefore assessed as moderate adverse but this is not considered to be significant in EIA terms.

*Effects on the Character of the Setting*

4.81 The first stage in assessing the effects of the proposed Development on landscape character is to evaluate the sensitivity of the receiving landscape to the type of change proposed. As indicated within GLVIA3, sensitivity of landscape character should be determined through a consideration of both susceptibility to change and the value accorded to the landscape. Susceptibility to change is defined as the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular landscape type or area, or an individual element and/or feature, or particular aesthetic and perceptual aspects) to accommodate the proposed Development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies (see paragraph 5.40 of GLVIA3).

4.82 To assess the potential impacts on landscape character, the susceptibility of the area with respect to the proposed Development was considered against the criteria described in the methodology (Appendix 4.1). These criteria have been adapted from a study carried out in Cornwall which determined the sensitivity of different landscapes within the county to solar PV development.

4.83 The extent of the potential effects over the wider character area was assessed spatially, by considering how much of the character area would be influenced. How much of the proposed Development would potentially be viewed and distances were factored in to arrive at a level of effect. This is inevitably linked to the extent of direct intervisibility of the area in question with the proposed Development.

4.84 However, sequential experience of change could also amount to a change of the experience of parts of an LCA outside the immediate ZTV of the proposed Development. If a large proportion of an LCA were to be adversely affected, then this would be likely to lead to loss of character over the whole of the LCA. The converse is also true. Assessment of impact upon landscape character in general cannot therefore just be carried out by considering discrete viewpoints alone.

4.85 Susceptibility is combined with landscape value to determine the sensitivity of a receptor landscape to the type of change proposed. Susceptibility and sensitivity are therefore not the same, in the context of LVIA.

4.86 Sensitivity to a solar PV development constructed within the character area depends on the defining characteristics. The defining characteristics of a character area which

is not the host character area can only be predominantly affected if one of its defining characteristics is views of the host character area.

4.87 No assessment of the susceptibility to change of the landscape character types or area/units within which the Site is located – with reference to the proposed Development – has been made within any of the published landscape character assessments which cover the area, therefore the criteria used in the Cornwall study have been adapted for use. Table 1.4 summarises the susceptibility of landscape unit LCM 4 (Kippax and Swillington Fringe) based on these criteria.

**Table 4.4: Summary of susceptibility to change of LCM 4**

| Criteria | Lower susceptibility | ⟷ | Higher susceptibility |
|---|---|---|---|
| **Landform** | | | |
| | Undulating landform, with hidden areas as well as some visible slopes where land drops to the Lower Aire Valley. | | |
| **Sense of openness / enclosure** | | | |
| | Hedges, tree belts and woodland combine to create a sense of enclosure across some areas, with more open areas elsewhere. | | |
| **Field pattern and scale** | | | |
| | Large, regular open fields on higher ground, with smaller fields of horse pasture around the fringes of settlements. | | |
| **Landcover** | | | |
| | A largely arable landscape, with some pasture and semi-natural landcover. | | |
| **Perceptual qualities** | | | |
| | A man-made rural landscape with much human activity and development. | | |
| **Distinctive landscape features** | | | |
| | The views over the Lower Aire Valley are probably the most distinctive feature of the landscape. There are relatively few landmarks. | | |
| **Scenic quality** | | | |
| | The area has low-medium scenic quality with no scenic quality designations. | | |
| **Overall susceptibility assessment** | | | |
| | This character area is considered to have a low - medium susceptibility to the proposed Development. Few of its key characteristics are vulnerable to change of the type associated with this form of renewable energy. The landcover, field pattern, and presence of nearby man-made landscape features all serve to lower susceptibility to change. | | |

4.88 Referring to Table 1.3 in Appendix 4.1, the landscape value of this landscape unit is considered to be medium – low as the landscape is undesignated but has some scenic

qualities. Condition is varied with a notable “fringe feel” in some areas, although footpaths and public rights of way are well used. Taking the overall landscape character sensitivity and landscape value judgements together, overall landscape sensitivity is also considered to be medium – low.

4.89 **Error! Reference source not found.**Table 4.5 summarises the potential effects upon the key characteristics of the *Kippax and Swillington Fringe* landscape unit.

**Table 4.5: Summary of potential impacts of aspects of the proposed Development on LCM 4**

| Key characteristics | Impact of the proposed Development |
|---|---|
| *Kippax and Swillington Fringe* | |
| Gently undulating farmland fringe | No change: topography is not affected by the proposed Development. |
| Large open arable fields on high ground | Limited change to site: land use would change from arable to grassland (under the solar panels). Field boundaries and features are retained. |
| Smaller fields of horse pasture | No change: fields are arable. |
| Strip woodland along becks | No change: woodland, hedgerows and trees within and adjacent to the Site would be retained. |
| Small wooded copses | |
| Low gappy hedgerows | |
| Landfill and quarrying activities | No change |
| Views over the Lower Aire Valley | Limited change: the proposed Development would feature in a small number of views over the valley. |

| Sensitivity | Magnitude of impact | Effect |
|---|---|---|
| Medium – low | Low<br><br>*Size/scale:*<br>Existing arable landcover will be lost across the Site area but this makes only a minor contribution to the character of the landscape unit. All other site features will be retained.<br>The proposed development would have a negligible impact on the key characteristics of the LCT as seen above.<br>*Geographical extent:*<br>The ZTV shows that the proposed development would visible over a small part of the landscape unit. Where visible, only part of the development would be seen.<br>*Duration/reversibility:*<br>The impacts would be long term but reversible. | Slight adverse (not significant) |

4.90 The landscape character of the Site would be altered by the presence of the proposed Development, but the surrounding field areas and landscape features including boundary features would be retained. The new buildings / infrastructure would create a new pattern in the existing landscape; however, these changes would only be readily noticeable at the site level and immediate setting of the Site (typically within approximately 1 km of the Site, where the majority of representative viewpoints are located) due to the low-level nature of the proposals. The scale of the development is in keeping with the existing scale of the arable farmland as the Site is formed of large, geometric fields. Therefore, the magnitude of impact on the *Kippax and Swillington Fringe* landscape unit is assessed as medium to low and the overall effect as slight adverse, which is **not significant** in EIA terms.

4.91 Table 4.6 summarises the susceptibility of landscape unit LCM 20 (Lower Aire) based on the criteria adapted from the Cornwall study.

**Table 4.6: Summary of susceptibility to change of LCM 20**

| Criteria | Lower susceptibility | ⟷ | Higher susceptibility |
|---|---|---|---|
| **Landform** | | | |
| | A flat / gently undulating lowland landscape which is likely to be less sensitive to solar PV development as arrays of solar PV panels will be less easily perceived in this type of landscape. | | |
| **Sense of openness / enclosure** | | | |
| | A relatively open landscape in which solar PV development may be more easily perceived. | | |
| **Field pattern and scale** | | | |
| | A landscape which is mainly defined by large, modern fields (often following the restoration of mineral workings) or unenclosed land such as the extensive complex of wetlands and waterside land adjacent to the River Aire and Aire and Calder Navigation. | | |
| **Landcover** | | | |
| | A largely arable landscape, but with areas of semi-natural and natural vegetation particularly associated with areas restored of wildlife habitat. | | |
| **Perceptual qualities** | | | |
| | A landscape with much human activity and development resulting from intensive use including mineral extraction, industry, transport corridors and power infrastructure. | | |
| **Distinctive landscape features** | | | |
| | Sensitive landscape features are notable for their relative sparsity. | | |
| **Scenic quality** | | | |
| | Low scenic qualities and unlikely to be affected by solar PV development. | | |
| **Overall susceptibility assessment** | | | |
| | This character area is considered to have a medium – low susceptibility to this form of renewable energy development, primarily through the influence of modern, human activity on a highly modified landscape. | | |

4.92 Referring to Table 1.3 in Appendix 4.1, the landscape value of this landscape unit is considered to be low on account of its lack of scenic quality and rarity, and poor condition resulting from much human activity and development past and present. Taking the landscape character sensitivity and landscape value judgements together, overall landscape sensitivity is considered to be medium – low.

4.93 **Error! Reference source not found.**Table 4.7 summarises the potential effects upon the key characteristics of the *Lower Aire* landscape unit.

**Table 4.7: Summary of potential impacts of aspects of the proposed Development on LCM 20**

| Key characteristics | Impact of the proposed Development |
|---|---|
| *Lower Aire* | |
| Broad river valley. | No change |
| Degraded, despoiled and restored land. | Limited change: land use would change from arable to grassland (under the solar panels). |
| Extraction works and industrial buildings. | Limited change: addition of small number of buildings associated with operation of the proposed Development |
| Remnant parkland areas. | No change |
| Major river and canal and wetlands. | No change |
| Pockets of intact arable land. | Limited change: land use would change from arable to grassland (under the solar panels). |
| Featureless regular restored arable fields. | Limited change: land use would change from arable to grassland (under the solar panels). |
| Power station cooling towers. | No change |

| Sensitivity | Magnitude of impact | Effect |
|---|---|---|
| Medium – low | Low<br><br>*Size/scale:*<br><br>Existing arable landcover will be lost across the Site area but this makes only a minor contribution to the character of the landscape unit. All other site features will be retained.<br><br>The proposed development would have a negligible impact on the key characteristics of the LCT as seen above.<br><br>*Geographical extent:*<br><br>The ZTV shows that the proposed development would visible over part of the landscape unit. Where visible, only part of the development would be seen.<br><br>*Duration/reversibility:*<br><br>The impacts would be long term but reversible. | Slight adverse (not significant) |

4.94 The landscape character of the Site would be altered by the presence of the proposed Development, but the surrounding field areas and landscape features including boundary features would be retained. The new buildings / infrastructure would create a new pattern in the existing landscape; however, these changes would only be readily noticeable at the site level and immediate setting of the Site due to the low-level nature of the proposals. From further afield only a small part of the proposed development would be seen. The scale of the development is in keeping with the existing scale of the arable farmland as the Site is formed of large, geometric fields. Therefore, the magnitude of impact on the *Lower Aire* landscape unit is assessed as low and the overall effect as slight adverse, which is not significant in EIA terms.

4.95 Table 4.8 summarises the susceptibility of landscape unit ELB 7 (Ledsham to Lotherton) based on the criteria adapted from the Cornwall study.

**Table 4.8: Summary of susceptibility to change of ELB 7**

| Criteria | Lower susceptibility | | ⟷ | Higher susceptibility | |
|---|---|---|---|---|---|
| **Landform** | | | | | |
| | Undulating landform, with hidden areas as well as some visible slopes where land drops to the Lower Aire Valley. | | | | |
| **Sense of openness / enclosure** | | | | | |
| | Relatively strong sense of enclosure in many areas due to hedgerows, tree belts, and woodland. | | | | |
| **Field pattern and scale** | | | | | |
| | Large regular arable fields. | | | | |
| **Landcover** | | | | | |
| | Large scale wooded farmland comprising mostly arable field but with occasional strips of pastoral farmland. | | | | |
| **Perceptual qualities** | | | | | |
| | A man-made rural landscape. | | | | |
| **Distinctive landscape features** | | | | | |
| | Large parkland and estate holdings of Ledston House and Lotherton Hall, with their parkland trees, and designed landscape features such as tree avenues and deer parks | | | | |
| **Scenic quality** | | | | | |
| | The area has medium scenic quality due to the presence of historic parkland. | | | | |
| **Overall susceptibility assessment** | | | | | |
| | This character area is considered to have a medium – low susceptibility to the proposed Development. | | | | |

4.96 Referring to Table 1.3 in Appendix 4.1, the landscape value of this landscape unit is considered to be medium – high as the landscape has some areas which are designated as historic Parks and Gardens with associated scenic qualities, and the area also forms part of a local landscape designation (Ledston/Ledsham SLA). Taking the overall landscape character sensitivity and landscape value judgements together, overall landscape sensitivity is considered to be medium.

4.97 **Error! Reference source not found.**Table 4.9 summarises the potential effects upon the key characteristics of the *Ledsham to Lotherton* landscape unit.

**Table 4.9: Summary of potential impacts of aspects of the proposed Development on ELB 7**

| **Key characteristics** | **Impact of the proposed Development** |
|---|---|
| *Ledsham to Lotherton* | |
| Gently rolling wooded farmland. | No change |
| Parkland estates. | No change |
| Large regular arable fields. | No change |
| Mixed plantations. | No change |
| Beech avenues. | No change |
| Semi-natural woodland along becks. | No change |
| Isolated strips of pasture along becks. | No change |
| Views over the Lower Aire Valley. | Limited change. A small part of the proposed Development area would be visible from a limited area of the landscape unit. |

| **Sensitivity** | **Magnitude of impact** | **Effect** |
|---|---|---|
| Medium | Negligible – low<br><br>*Size/scale:*<br><br>The proposed development would have a negligible impact on the key characteristics of the LCT as seen above.<br><br>*Geographical extent:*<br><br>The ZTV shows that the proposed development would be visible over a small part of the landscape unit. Actual visibility is limited by extensive vegetation.<br><br>*Duration/reversibility:*<br><br>The impacts would be long term but reversible. | Slight adverse (not significant) – imperceptible |

4.98 The landscape character of the area would hardly be altered by the presence of the proposed Development in views. The infrastructure would create a new pattern in the landscape; however, these changes would only be readily noticeable at the level of the immediate setting of the Site (up to 1 km) due to the low-level nature of the proposals and would not be seen from further afield and views would be very limited in scale and extent. Therefore, the magnitude of impact on the *Ledsham to Lotherton* landscape unit is assessed as negligible – low and the overall effect as slight adverse - imperceptible, which is not significant in EIA terms.

**Effects on Visual Amenity during Construction**

4.99 Table 1.3 identifies the possible source of construction impacts. Visual impacts are assumed to be adverse during the construction phase but would be temporary and not significant.

**Effects on Visual Amenity during Operation**

4.100 Following a desk-based study, fieldwork has verified the main settlements, dwellings, roads, footpaths, and cycle routes (visual receptors) from which the Site can be seen within the study area. The ZTV (Figure 4.4) indicates that the proposed Development would be visible over approximately one-quarter of the study area at most due to the undulating landscape of topography of escarpments and valleys coupled with screening by vegetation and buildings, particularly in the low-lying and flatter areas of the valley, but also surrounding the Site itself where the landscape is relatively well-wooded. Fieldwork has verified that there would typically be two main types of view of the proposed Development: the first is where the viewpoint location is on elevated ground to the north, west and east of the Site. The second is where the view is situated adjacent to the Site boundary.

4.101 The process of selecting representative viewpoints to illustrate visual effects of the proposed Development has already been explained within Paragraph 1.64 and Table 1.2, and it takes into consideration the locations of these typical views, as described above. Some of the visual effects upon key sensitive and representative receptors are illustrated by annotated photographs. Photomontages are used to draw conclusions on the visibility and likely prominence of the proposed Development at Viewpoints 3, 5 and 8 (Figures 4.8, 4.10, and 4.13).

*Theoretical visibility of the proposed Development*

4.102 As noted above, the land in which the proposed Development would be sited has relatively limited visibility from within the study area. Although the ZTV (Figure 4.4) includes roughly one-quarter of the land within the 5km study area, the reality is that perceptibility of the solar arrays would be more limited, within areas of wooded farmland and urban areas, due to:

- Low-lying or gently undulating topography, combined with;
- Hedgerows, hedgerow trees, areas of woodland and other vegetation which would screen views towards the proposed Development; and
- Buildings and other structures within the built-up urban environment.

4.103 More elevated locations provide greater potential for views but also create large areas of “visual shadow” from where the proposed Development would not be visible. Areas

having no theoretical visibility include most of the study area to the north, north-west and north-east of site. To the east and west of the Site most theoretical visibility occurs within a 2km radius of the Site. To the south, there is no visibility of the proposed Development along the Lower Aire Valley and most of the landscape to the south apart from areas on the edge of Castleford and south of Mickletown. Therefore, most of the representative viewpoints are located within 1km of the Site, either on or close to the boundary, or from slightly more elevated locations from where the proposed Development would be expected to be a visible feature.

4.104 Table 1.10 describes the levels of effect assessed at the 11 representative viewpoints, summarising the information contained within Appendix 4.3. As noted previously, these viewpoints were selected in discussion with local authority during the scoping process to ensure that a range of receptors and locations were included within the assessment. The visual assessment itself refers to the findings of the viewpoint assessment, but it is important to note that the viewpoint assessments themselves form only a part of the picture. Many of the receptors included in this assessment are people in transit, principally recreational users of the various footpaths which cross the local area. The visual assessment therefore focuses on the journey and the visual experience of the landscape as people move through it, rather than simply on the effects at one or other fixed location, except where this may be recognised as an important viewpoint in its own right. Fieldwork suggests that there would be relatively few views of the development from residential receptors.

**Viewpoints**

4.105 Viewpoints are chosen to illustrate the potential visual effects of a scheme. The principal criterion is that they must be representative of the range of views and viewer types likely to experience the proposed Development. A total of 11 representative viewpoints were identified in consultation with LCC. The viewpoints are mapped on Figure 4.4. Viewpoints 1 to 11 (Figures 4.6 to 4.16) illustrate the Site in its context of the surrounding landscape and settlements.

4.106 The method of illustration and visualisation adopted for each viewpoint has also been agreed in discussion with the local planning authority. In summary, key viewpoints (of which there were considered to be three) have been illustrated through the use of photomontage visualisations (prepared to The Highland Council Standards, as required by the Council) with the remainder of the viewpoints illustrated by means of annotated panoramas prepared to Landscape Institute Guidance for Type 1 Visualisations. Table 4.10 below summarises the presentation of this information.

**Table 4.10: Summary of visualisation methodology and illustrations produced**

| # | Location | Visualisation | Reason | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Barnsdale Road | Annotated photograph of existing view. LI Type 1 | Very brief, glimpsed view, most receptors travelling at speed. | 2 * 90° Horizontal Field of View (HFoV) Cylindrical panoramas presented at A1 | | | | | | |
| | | | | Figure 4.6a | | | Figure 4.6b | | | |
| 2 | Non-Definitive Footpath on southern boundary | Annotated photograph of existing view. LI Type 1 | Partially screened by hedgerow. | 2 * 90° HFoV Cylindrical panoramas presented at A1 | | | | | | |
| | | | | Figure 4.7a | | | Figure 4.7b | | | |
| 3 | Footpath between Kippax Meadows and Woodlands Croft | Photomontages (as per Highland Council guidance) | Open view towards top part of site. | Planar panorama for landscape assessment 65.5° HFoV (landscape assessment), photomontage, baseline panorama and model | | | 50mm single frame colour photomontage 39.6° HFoV (visual assessment) | | 75 single frame colour photomontage 27.0° HFoV (visual assessment) | |
| | | | | Completion | Baseline Panorama and model | 10 Years | Completion | 10 Years | Completion | 10 Years |
| | | | | Figure 4.8a | Figure 4.8b | Figure 4.8c | Figure 4.8d | Figure 4.8e | Figure 4.8f | Figure 4.8g |
| 4 | Footpath in Kippax Meadows | Annotated photograph of existing view. LI Type 1 | View screened by vegetation. | 1 * 90° HFoV Cylindrical panoramas presented at A1 | | | | | | |
| | | | | | | | | | | |
| 5 | Park Lane | Photomontages (as per Highland Council guidance) | Partially screened view towards site, residential receptors on Park Lane at settlement edge | Planar panorama for landscape assessment 65.5° HFoV (landscape assessment), photomontage, baseline panorama and model | | | 50mm single frame colour photomontage 39.6° HFoV (visual assessment) | | 75 single frame colour photomontage 27.0° HFoV (visual assessment) | |
| | | | | Completion | Baseline Panorama and model | 10 Years | Completion | 10 Years | Completion | 10 Years |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Figure 4.10a | Figure 4.10b | Figure 4.10c | Figure 4.10d | Figure 4.10e | Figure 4.10f | Figure 4.10g |
| 6 | Kippax Linesway | Annotated photograph of existing view. LI Type 1 | Brief, glimpsed view, partially screened by vegetation. | 1 * 90° HFoV Cylindrical panoramas presented at A1 | | | | | | |
| | | | | Figure 4.11 | | | | | | |
| 7 | Green Lane | Annotated photograph of existing view. LI Type 1 | View screened by vegetation. | 1 * 90° HFoV Cylindrical panoramas presented at A1 | | | | | | |
| | | | | Figure 4.12 | | | | | | |
| 8 | Brigshaw Lane | Photomontages (as per Highland Council guidance) | Open view towards top part of site. | Planar panorama for landscape assessment 65.5° HFoV (landscape assessment), photomontage, baseline panorama and model | | | 50mm single frame colour photomontage 39.6° HFoV (visual assessment) | | 75 single frame colour photomontage 27.0° HFoV (visual assessment) | |
| | | | | Completion | Baseline Panorama and model | 10 Years | Completion | 10 Years | Completion | 10 Years |
| | | | | Figure 4.13a | Figure 4.13b | Figure 4.13c | Figure 4.13d | Figure 4.13e | Figure 4.13f | Figure 4.13g |
| 9 | Hall Lane | Annotated photograph of existing view. LI Type 1 | Glimpsed view, partially screened by vegetation. | 1 * 90° HFoV Cylindrical panoramas presented at A1 | | | | | | |
| | | | | Figure 4.14 | | | | | | |
| 10 | PRoW on south bank of River Calder | Annotated photograph of existing view. LI Type 1 | Distant view of part of site, partially screened by vegetation. | Single Frame 39.6° HFoV presented at A3 | | | | | | |
| | | | | Figure 4.15 | | | | | | |
| 11 | Open space north of Castleford | Annotated photograph of existing view. LI Type 1 | Distant view of part of site, partially screened. | Single Frame 39.6° HFoV presented at A3 | | | | | | |
| | | | | Figure 4.16 | | | | | | |

4.107 A summary of the viewpoint assessment is included in Table 4.11 below, with the detailed assessment in Appendix 4.3.

**Table 4.11: Summary of viewpoint assessment**

| # | Location | Distance (km) | Receptor | Sensitivity (highest) | Magnitude of Impact | Effect (Year 1) |
|---|---|---|---|---|---|---|
| 1 | Barnsdale Road | Adjacent | Road users | Medium | Low | Slight adverse (not significant) |
| 2 | Non-definitive footpath on southern boundary | Adjacent | Recreational users | High | Medium – low | Moderate adverse (not significant) |
| 3 | Footpath between Kippax Meadows and Woodlands Croft | 0.15 | Recreational users | High | Medium – high | **Substantial** adverse (significant) |
| 4 | Footpath in Kippax Meadows | 0.2 | Recreational users | High | Negligible | Imperceptible |
| 5 | Park Lane Playground | 0.23 | Residents (adjacent) | High | Low | Slight – moderate adverse (not significant) |
| 6 | Kippax Linesway | 0.24 | Recreational users | High | Low | Slight – moderate adverse (not significant) |
| 7 | Green Lane | 0.44 | Recreational users | High | Negligible | Imperceptible |
| 8 | Footpath between Station Lane and Brigshaw Lane, known as The Trod | 0.84 | Recreational users | High | Medium – low | Moderate adverse (not significant) |
| 9 | Hall Lane, Ledston | 1.0 | Residents (adjacent) | Medium (upper storey)<br>High (if views available from ground floor | Low | Slight adverse (not significant)<br>Slight – moderate adverse (not significant) for high sensitivity receptors |
| 10 | PRoW on south bank of River Calder | 2.44 | Recreational users | High | Negligible | Imperceptible |
| 11 | Agricultural land north of Castleford | 3.21 | Recreational users | High | Negligible | Imperceptible |

*Residential receptors*

4.108 These comprise individual properties and settlements, which are typically considered to be high sensitivity receptors. The settlements within 5km of the Site which are also within the ZTV are considered in Appendix 4.4 (Table 1.1). The views from the individual properties and small groups of properties mostly within 1km of the Site are also assessed in Appendix 4.4 (Table 1.2). Beyond 1km, but within the 2km detailed study area, desk study suggests that most residential properties which lie within the ZTV form part of a settlement and are therefore considered under that heading. Significant effects on residents of individual properties beyond 2km are unlikely to occur and have not been considered as part of this assessment.

4.109 In relation to the settlements within the study area, perceptibility of the proposed Development is only likely to occur from five locations. The first location is from a small number of properties on the southern edge of Kippax, which have the potential for open and direct views over the northern (top) part of the Site in which the proposed Development would be a prominent feature. These properties are located in the Mount Pleasant area of the village and include houses on Woodlands View, Woodlands Croft and Mt Pleasant, which are approximately 500 m from the Site. In this case a medium – high magnitude of impact operating on high sensitivity receptors would give rise to a **substantial** adverse effect which would be **significant** in EIA terms. A similar view is likely to be experienced as that illustrated by Viewpoint 3 (Figure 4.8).

4.110 There are likely to be other properties also on the southern side of Kippax with views of part of the Site including locations on Apple Tree Lane, Apple Tree Mews, and Tatefield Grove. Fieldwork suggests that in these cases views would typically be obtained from upper floor windows (lower sensitivity) with the view composition being slightly different to Viewpoint 3 in that the foreground views in this case would be occupied by intervening properties and gardens, etc. with a lower magnitude of impact therefore predicted. It is considered that a medium magnitude of impact on medium sensitivity receptors would give rise to moderate adverse effects (not significant).

4.111 The second location is from a small number of properties on the north-eastern edge of Allerton Bywater, mostly located on Park Lane. A small part of the proposed Development would be visible from this location, consisting principally of solar PV panels seen in the eastern part of the Site, and filtered through intervening vegetation. In this case a low magnitude of impact operating on high sensitivity receptors would give rise to a slight – moderate adverse effect which would not be significant in EIA terms. A similar view is likely to be experienced as that illustrated by Viewpoint 5 (Figure 4.10).

4.112 The third location is from a very small number of properties on the eastern edge of Ledston, off Hall Lane. Views are mostly screened by intervening trees and buildings; however, there may be limited visibility of a small area in the southern part of the Site from houses. Such views are most likely from the upper storeys of houses. Receptor sensitivity is considered to be high (for ground floor areas where views may be limited), and medium for upper floors where greater visibility of the Site (similar to Viewpoint 9) may be obtained. The magnitude of impact is considered to be low, resulting in a level of effect which would be no greater than slight adverse (or slight – moderate adverse for high sensitivity receptors). This is not considered to be significant. A similar view is likely to be experienced as that illustrated by Viewpoint 9 (Figure 4.14)

4.113 The fourth location is from Great Preston, where there would be limited visibility from small areas of the settlement of the northern part of the Site. Views are likely to be obtained from properties on the eastern side of the settlement, for example on St Aidans Road, Church Road and off Whitehouse Lane. The proposed Development is likely to be a noticeable feature in these views. Receptor sensitivity is considered to be high and the magnitude of impact medium – low, resulting in a level of effect which would be no greater than moderate adverse. This is not considered to be significant. From limited numbers of properties on the eastern edge of the settlement (principally Glencoe Gardens) there may also be views towards the northern part of the Site similar to the view obtained from Viewpoint 8 (Figure 4.13). Again, receptor sensitivity is considered to be high (worst case, although more open views would tend to be obtained from first floor windows, and therefore considered to have a lower sensitivity) and the magnitude of impact medium – low, resulting in a level of effect which would be no greater than moderate adverse (not significant).

4.114 Finally, there may be very limited visibility of the northern part of the Site and proposed Development from a small number of locations on the northern edge of Castleford, principally from properties to the south of Healdfield Road (north of Heald Wood) where there is a marked change in topography and elevation. In this case, a negligible – low magnitude of impact would give rise to a slight adverse (not significant) – imperceptible effect. Viewpoint 11 (Figure 4.16) illustrates the view obtained from a location slightly further to the east and shows that the Site is unlikely to be visible, nor the proposed Development readily perceptible.

4.115 Elsewhere, views of the proposed Development are unlikely to be readily obtained from other settlements in the study area and ZTV including, Whitwood Mere, Lower Mickletown, Mickletown Methley, Methley Junction, Woodend and Newton.

4.116 The potential visual effects on residential properties within 1 km of the Site were also assessed. Of the properties considered only one is predicted to experience significant adverse effects, namely Home Farm. Views west from this property appear to be obtained from upper storey windows only, where receptors are considered to have a lower sensitivity. Part of the proposed Development would be visible in close proximity. In this case a high magnitude of impact on a medium sensitivity receptor would give rise to a moderate – substantial (significant) adverse effect.

4.117 The other properties assessed as having less than significant effects are listed in Appendix 4.4 (Table 1.2) as mentioned above.

4.118 In relation to a planning application (reference: 18/01446/OT) for a proposed residential housing development on land allocated to the south of the Site, (referred to in Paragraph 1.65), the potential for any effects on future residents would be assessed in relation to the representative viewpoint locations 2 and 5. This suggests that any adverse effects would be less than significant, particularly as the Illustrative Masterplan for the development shows a substantial landscape buffer between the site and the residential areas.

*Transport network and recreational receptors*

4.119 These include roads and public rights of way within the study area and the ZTV, and the effects are assessed in detail in Tables 1.3 and 1.4 of Appendix 4.4. Road users are generally considered medium sensitivity receptors (except in urban areas where the sensitivity is low) and rights of way users are generally considered high sensitivity

receptors. Effects are typically intermittent as the roads and paths cross areas of potential inter-visibility.

*A-roads*

4.120 None of the users of the main roads running through the study area would experience prominent effects on visual amenity. The closest main (A) road is the A656 (Barnsdale Road), which runs approximately north – south immediately to the east of the Site. For the most part, the Site is screened in views by intervenging hedgerows and trees; however, from a small number of locations there would be glimpsed views of the proposed Development with vehicles travelling at up to 60 mph. Viewpoint 1 (Figure 4.6) illustrates the type of view which may be experienced. The development areas are set back approximately 300 m from the road and only a small part of the proposed Development would be visible including an area of panels and the O&M building and substation equipment, glimpsed briefly through the gap in the roadside vegetation. However, the proposed Development would not block or otherwise have an impact on any views to the wider landscape or be seen on the skyline; it would instead be backclothed by the surrounding vegetation which would tend to decrease its overall perceptibility. In this case, a low magnitude of impact on medium sensitivity receptors is considered to give rise to a slight adverse effect (not significant).

4.121 A number of A-roads pass through Castleford (A6032, A655, A656, A6539) but views of the Site from within the built-up areas of the town is likely to be extremely limited and visual impacts on road users imperceptible. The A639 (also known as Barnsdale Road) runs to the west of Castleford (approximately 2.91 km south-west of the Site) and the ZTV indicates some theoretical visibility. Consideration of the view from Viewpoint 10 (Figure 4.15) which is located nearby suggests that the proposed Development is unlikely to be visible from the road when vegetation is in leaf, but there may be some (very limited) visibility in winter. However, at this distance the magnitude of impact would be negligible, giving rise to effects on medium sensitivity receptors which are considered to be imperceptible.

4.122 The ZTV also indicates very limited theoretical visibility of the proposed Development from the A642, located some 3.41 km to the north-west of the Site; however, it is considered that views of the proposed Development would be screened by intervening vegetation and that the magnitude of impact would be negligible.

*B-roads*

4.123 There is only a small number of B-roads within the study area and they lie almost wholly outside the ZTV of the proposed Development. Where theoertical visibility is indicated it is considered that there would not be any actual views of the Site due to screening by intervening vegetation and buildings.

*Minor/Urban Roads*

4.124 The potential for visual effects on users of minor roads is considered in detail in Table 1.3 of Appendix 4.4. In general, views of the proposed Development would be screened by intervening vegetation and buildings, with a negligible magnitude of impact giving rise to imperceptible effects on visual amenity. In a few locations, there are likely to be limited views of the proposed Development as follows. To the south of the Site, there would be glimpses from Park Lane (0.22 km south) with vehicles travelling at up to 30mph. Generally, views would be oblique, filtered and largely screened by intervening vegetation. Viewpoint 5 (Figure 4.10) illustrates the type of

view which may be experienced. In this case a low magnitude of impact on a low sensitivity receptor would give rise to a slight adverse (not significant) – imperceptible level of effect.

4.125 Brigshaw Lane runs between Kippax and Woodend and is located approximately 0.62 km west of the Site. There would be partial views of the development areas in the northern part of the Site with existing woodland providing screening of the southern development areas. Views would be similar to Viewpoint 8 (Figure 4.13) although with less of the Site visible. In this case a medium – low magnitude of impact on medium sensitivity receptors would give rise to a slight – moderate adverse effect (not significant).

4.126 Preston Lane (northern end) is located approximately 1.44 km to the west of the Site. There would be a glimpsed view of the development area in the northern part of the Site from a short section of the road. It would be seen over the hedgerow at the side of the road if the height of the vegetation allows. In this case a medium – low magnitude of impact on low sensitivity receptors would give rise to a slight adverse effect (not significant).

*Recreational receptors*

4.127 This includes walkers on PRoWs, cyclists and users of other recreational facilities such as golf courses, nature reserves, etc. The potential for visual effects on users of the local public rights of way network is considered in detail in Table 1.4 of Appendix 4.4, with a number of effects of moderate adverse or lower predicted to occur. Immediately to the south of the Site is a non-definitive footpath which runs across farmland along the Site boundary. A small part of the proposed Development would be visible including an area of and security fence, glimpsed briefly through a gap in the vegetation. However, it would not block or otherwise have an impact on any views to the wider landscape or be seen on the skyline; it would instead be backclothed by the surrounding vegetation which would tend to decrease its overall perceptibility. A greater extent would be seen in winter, but filtered thought the vegetation. Views, where available, would be similar to those experienced at Viewpoint 2 (Figure 4.7). A medium – low magnitude of impact on high sensitivity receptors would give rise to a moderate adverse effect (not significant).

4.128 Views from Kippax Linesway (also the route of National Cycle Network Route 697) are constrained by dense vegetation for the most part; however, there are some locations where gaps in the vegetation would allow views to the Site. The bridleway is located approximately 0.3 km south-west of the Site. A small part of the proposed Development would be visible seen through gaps in the vegetation. However, it would not block or otherwise have an impact on any views to the wider landscape or be seen on the skyline. A greater extent would be seen in winter but filtered thought the vegetation. Views would be intermittent and Viewpoint 6 (Figure 4.11) illustrates the type of view which may be experienced. A low magnitude of impact on high sensitivity receptors would give rise to a slight – moderate adverse effect (not significant).

4.129 To the west of the Site are definitive footpaths Garforth 28 and 30 located approximately 0.34 and 0.42 km from the Site respectively. On footpath 28 there may be glimpsed views of the development along the northern part of the footpath between intervening vegetation. Views would reduce moving south along the footpath as the intervening vegetation becomes denser. A low – negligible magnitude of impact would give rise to a slight adverse effect (not significant). On footpath 30, there may be glimpsed views of the northern part of the proposed Development. It would be seen

over the hedgerow at the side of the path if the height of the vegetation allows. In this case a low magnitude of impact operating on a high sensitivity receptor would give rise to a slight – moderate adverse effect (not significant).

4.130 Also, to the west and north-west of the Site are definitive bridleway Garforth 31 and the non-definitive footpath known as the Trod. Bridleway 31 is also known as Green Lane and Billywood and commences approximately 125 m south of its junction with Brecks Lane and proceeds southward to its junction with Westfield Lane thence continuing in a southerly direction round Townclose Hills to its junction with Station Road. Only the section to the south of Townclose Hills lies within the ZTV of the proposed Development. There would be views to the northern part of the Site in which the introduction of solar panels into the view would be a noticeable addition. It is considered that a medium – low magnitude of impact operating on a high sensitivity receptor would give rise to moderate adverse effect (not significant).

4.131 The Trod runs between Brigshaw Lane and Berry Lane and is located approximately 0.84 km west of the Site. Part of the proposed Development would be visible, seen in the landscape. However, it would not block or otherwise have an impact on any views to the wider landscape or be seen on the skyline. A greater extent would be seen in winter but filtered through vegetation. It is considered that the proposed Development would give rise to a medium – low magnitude of impact, resulting in a moderate adverse effect (not significant). Viewpoint 8 (Figure 4.13) illustrates the type of view which may be experienced from this footpath.

4.132 The only significant effect on recreational walkers is considered to occur on the permissive footpath to the north of the Site linking Kippax Meadows to Woodland Croft, located at a distance of approximately 150 m from the Site boundary. This view is illustrated by Viewpoint 3. It shows that part of the proposed Development would be visible including an area of solar panels and security fencing, glimpsed briefly through a gap in the vegetation. However, it would not block or otherwise have an impact on any views to the wider landscape or be seen on the skyline; it would instead be backclothed by the surrounding vegetation which would tend to decrease its overall perceptibility. A greater extent would be seen in winter, but filtered through intervening vegetation. It is considered that the proposed Development would give rise to a medium – high magnitude of impact, leading to a substantial adverse effect on high sensitity receptors. This level of effect would be signifcant in EIA terms.

4.133 Other recreational receptors considered as part of the assessment were visitors to Kippax Meadows Nature Reserve and Kippax Park Fishery. Viewpoint 4 (Figure 4.9) is located in the nature reserve, approximately 200 m north-west of the Site boundary. Between the Site and the area of grassland in the centre of the reserve there is a densely planted belt of scrub and woodland, which is up to 100 m wide in places. It is considered that the proposed Development would therefore give rise to a negligible impact and have an imperceptible effect on visual amenity.

4.134 From Kippax Park Fishery, there would be close range views from some locations towards the northern part of the Site, which is located at a distance of approximately 125 m to the east. Recreational receptors at this location are considered to have a medium sensitivity to change as the nature of views are incidental to the primary activity. Whilst views of the proposed Development would be close-range, long term and with new features that would be prominent, the effects would be reversible and it is likely that a small part of the view would be occupied, with vegetation around the lakes and on the Site boundary providing some screening and filtering of views. The

overall magnitude of impact is considered to be medium, giving rise to a moderate adverse effect (not significant) on medium sensitivity receptors.

**Decommissioning Phase**

*Potential landscape effects after decommissioning*

4.135 The actual removal of the solar PV panels and the associated above ground structures and infrastructural facilities at decommissioning would result in some temporary localised impacts, similar to the construction phase. However, once this is complete, the only residual impacts would be the effects of the land management changes introduced as part of the scheme, which would not result in prominent adverse residual impacts on the landscape character. The landscape effects of the scheme are reversible.

*Potential visual effects after decommissioning*

4.136 The removal of the solar panels and associated structures and infrastructure facilities at decommissioning would result in some temporary impacts, but once dismantled, the Site would be restored, and the long-term visual impacts caused by their presence would disappear. The effects of the visible elements of the proposed Development are reversible, though the beneficial effects associated with new planting provided within the Site and on the Site boundaries would be remain as this would not be removed.

**Cumulative Effects**

4.137 The potential for cumulative landscape and visual effects to result from a proposed Development is typically considered in relation to other similar developments (i.e. large-scale solar photovoltaic installations). The need for a cumulative assessment was not mentioned in the scoping response from LCC and there are no other large-scale solar PV farm developments, either existing or in the planning system, within the study area.

## MITIGATION AND ENHANCEMENT

4.138 Mitigation measures are required in order to avoid, reduce, remedy or compensate for any significant adverse effects of the proposed Development. The principle of mitigation commences with the design of the Development and is an iterative process, in that measures are taken, wherever possible, to adjust the design to minimise adverse effects. This has already been undertaken by locating the proposed Development within an area not covered by any landscape designations and with a high proportion of tree and woodland cover in the surrounding landscape which, combined with topography effectively screens most views towards the Site and the proposed Development. Only significant adverse effects require formal mitigation under the terms of the EIA Regulations. Other planting is included to enhance the landscape, to mitigate other impacts (e.g. on heritage receptors) and/or to achieve biodiversity net gain on the Site.

4.139 Visual screening in the immediate environs of the Site would be maintained by retaining the trees and hedgerows within and around the perimeter of the Site, and along internal field boundaries. Furthermore, the hedgerows would be allowed to grow up to a height of 3 m, to provide additional screening with any gaps being planted up as necessary. Additional enhancements and those as a result of biodiversity net gain in the form hedgerow and tree planting will assist in filtering views of the proposed

development from surrounding areas is also proposed as shown on Figure 4.5. The Site would be seeded with an appropriate species rich grassland mix once the development is complete.

4.140 For modelling purposes, a conservative growth rate of 300 mm a year for trees has been assumed with an initial planting height of 3 m and spacing of 10 m. The photomontages which have been prepared show an approximation of mitigation planting 10 years after planting (medium term). In the longer term, the trees will continue to grow and form substantial landscape features in their own right.

## RESIDUAL EFFECTS

4.141 Residual effects are those effects of the development which still persist after mitigation measures have been implemented. The assessment of residual effects considers the ongoing establishment and growth of vegetation on and within the vicinity of the Site in the long term, secured through a landscape management strategy and plan.

### During Construction and Decommissioning

4.142 Standard construction techniques and methodologies (best practice) should be applied as typically secured through provision of a Construction Environmental Management Plan (CEMP). There are no additional mitigation measures to be implemented therefore residual effects during construction and decommissioning are as described previously.

### During Operation

4.143 Table 1.12 shows a summary of effects at completion and into the long term as mitigation and enhancement planting grows and matures, in relation to landscape units and representative

**Table 4.12: Summary of residual effects on Landscape Units and Representative Viewpoints**

| # | Landscape Unit or Representative Viewpoint Location | Distance (km) | Receptor | Sensitivity (highest) | Magnitude of Impact (Completion) | Effect (Completion) | Magnitude of Impact (Long Term) | Effect (Long Term) |
|---|---|---|---|---|---|---|---|---|
| Landscape Unit | | | | | | | | |
| LCM 4 | Kippax and Swillington Fringe | Part of the site lies within the area | Landscape character of the area | Medium – low | Low | Slight adverse (not significant) | Negligible – low | Slight adverse (not significant) - imperceptible |
| LCM 20 | Lower Aire | Part of the site lies within the area | Landscape character of the area | Medium – low | Low | Slight adverse (not significant) | Negligible – low | Slight adverse (not significant) - imperceptible |
| ELB 7 | Ledsham to Lotherton | Adjoining site boundary (closest part) | Landscape character of the area | Medium | Negligible – low | Slight adverse (not significant) - imperceptible | Negligible | Imperceptible |
| Representative Viewpoint | | | | | | | | |
| 1 | Barnsdale Road | Adjacent | Road users | Medium | Low | Slight adverse (not significant) | Negligible – low | Slight adverse (not significant) - imperceptible |
| 2 | Non-definitive footpath on southern boundary | Adjacent | Recreational users | High | Medium – low | Moderate adverse (not significant) | Low | Slight – moderate adverse |
| 3 | Footpath between Kippax Meadows and Woodlands Croft | 0.15 | Recreational users | High | Medium – high | **Substantial** adverse (significant) | Medium – low | Moderate adverse (not significant) |
| 4 | Footpath in Kippax Meadows | 0.2 | Recreational users | High | Negligible | Imperceptible | Negligible | Imperceptible |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 5 | Park Lane Playground | 0.23 | Residents (adjacent) | High | Low | Slight – moderate adverse (not significant) | Negligible – low | Slight adverse (not significant) |
| 6 | Kippax Linesway | 0.24 | Recreational users | High | Low | Slight – moderate adverse (not significant) | Negligible – low | Slight adverse (not significant) |
| 7 | Green Lane | 0.44 | Recreational users | High | Negligible | Imperceptible | Negligible | Imperceptible |
| 8 | Footpath between Station Lane and Brigshaw Lane, known as The Trod | 0.84 | Recreational users | High | Medium – low | Moderate adverse (not significant) | Low | Slight – moderate adverse (not significant) |
| 9 | Hall Lane, Ledston | 1.0 | Residents (adjacent) | Medium (upper storey)<br>High (if views available from ground floor | Low | Slight adverse (not significant)<br>Slight – moderate adverse (not significant) for high sensitivity receptors | Negligible – low | Slight adverse (not significant) – imperceptible<br>Slight adverse (not significant) |
| 10 | PRoW on south bank of River Calder | 2.44 | Recreational users | High | Negligible | Imperceptible | Negligible | Imperceptible |
| 11 | Agricultural land north of Castleford | 3.21 | Recreational users | High | Negligible | Imperceptible | Negligible | Imperceptible |

*Landscape effects*

4.144 The landscape effects on the character of the Site were assessed as moderate adverse (not significant) on completion of the proposed Development. In the longer term, as mitigation and enhancement planting matures, the level of adverse effects would decrease and is anticipated to be slight – moderate adverse (also not significant).

4.145 The landscape effects on the character of the setting on completion were assessed with reference to the landscape units which the Site lies inside, and any adjacent areas where signgicant effects might occur. Three character units were considered. For LCM 4 (Kippax and Swillington Fringe), a low magnitude of impact was considered to give rise to a slight adverse level of effect. In the longer term, the level of adverse effects would decrease and is anticipated to be slight adverse – imperceptible. For LCM 20 (Lower Aire), the conclusion is similar, with mitigation planting leading to a reduction in the level of effects over the longer term to slight adverse – imperceptible. These effects are not considered to be significant in EIA terms. For ELB 7 (Ledsham to Lotherton) the effect at completion was considered to be slight adverse – imperceptible. In the longer term this is likely to decrease to imperceptible.

*Visual effects*

4.146 This section will describe any residual effects on visual amenity of receptors where the level of effect at completion of construction was considered to be moderate adverse or higher.

*Effects on residential receptors*

4.147 Effects on residential receptors were considered with reference to both the ZTV and to settlements (within the 5 km study area) and individual properties (within 1 km of the Site). At completion, up to **substantial** adverse effects (significant) were predicted for a small number of properties on the southern edge of Kippax with open views towards the northern part of the Site. These properties are located in the Mount Pleasant area of the village and include houses on Woodlands View, Woodlands Croft and Mt Pleasant, which are approximately 500 m from the Site. In the long term mitigation planting would start to take effect and introduce screening and filtering of the view. Therefore it is considered that the residual effects would be lower (up to moderate adverse) and not significant.

4.148 Up to a **moderate – substantial** adverse effect (significant) was predicted at completion for Home Farm, located just to the east of the Site. Again, in the long term mitigation planting would start to take effect and introduce screening of the view. Therefore it is considered that the residual effects would be lower (up to moderate – slight adverse) and not significant.

4.149 Moderate adverse effects at completion were predicted for other residential receptors in Kippax (houses on Apple Tree Lane, Apple Tree Mews, Tatefield Grove). In the longer term the level of effects is likely to reduce to slight adverse (also not significant) as the additional planting along the Site boundary continues to grow and mature.

4.150 Moderate adverse effects at completion were also predicted for small numbersof residential properties in the settlement of Great Preston including Glencoe Gardens, St Aidans Road, Church Road and Whitehouse Lane. In the longer term the level of effects is likely to reduce to slight adverse (also not significant).

*Effects on Users of Transportation Routes and Public Rights of Way*

4.151 No effects of greater than slight – moderate adverse were predicted for road users of the surrounding network, and in the long term effects would reduce further (up to slight adverse). These levels of effect would not be significant.

4.152 For recreational users of footpaths and rights of way, significant adverse effects at completion were predicted only for the permissive footpath between Kippax Meadows and Woodland Croft where the effect would be up to **substantial** adverse. In the long term, the mitigation planting would start to take effect and introduce screening and filtering of the view. Therefore, it is considered that the effects would be lower (up to moderate adverse) and not significant.

4.153 Other footpaths where the effect at completion was predicted to be up to moderate adverse (not significant) include the following: the non-definitive footpath running along the southern site boundary, bridleway Garforth 31 to the south of, and the non-definitive footpath runing between Brigshaw Lane and Berry Lane/Station Road. In the long term these effects would reduce to slight adverse, or slight – moderate adverse, with the growth of site wide vegetation and the additional mitigation planting.

*Effects on other recreational receptors*

4.154 From Kippax Park Fishery, there would be close range views from some locations towards the northern part of the Site, where were cosnidered to give rise to a moderate adverse effect (not significant) on medium sensitivity receptors at completion. In the long term these effects would reduce to slight adverse (also not significant).

## SUMMARY AND CONCLUSION

### Summary

4.155 This LVIA chapter presents an assessment of the effects of the proposed Development on the landscape character and visual amenity of the Site and its surroundings. The LVIA has considered the effects of construction and decommissioing and of the completed development on landscape and visual amenity and the conclusions of this are set out below. The LVIA is supported by plans and appendices. The landscape receptors have been identified and assessed for their value and susceptibility to the proposed Development, and the potential visual receptors (people) present in the study area, within settlements or individual properties, users of roads, and rights of way within the ZTV for the proposed Development have similarly been identified and assessed.

4.156 The LVIA has also assessed the residual effects that are likely to occur in the long term following the implementation of mitigation and enhancement measures which have been proposed. These measures include:

- Retention and management of existing vegetation features within the Site and along boundaries. These will be properly protected during the full duration of construction operations, to BS 5837:2012.

- Additional woodland and hedgerow planting to both help screen the development and contribute to the enhancement of the existing green infrastructure of the Site.

- Seeding of species rich grassland with wildflowers across the Site

4.157 The ZTV indicates that the extent of theoretical visibilty from locations within the study area is relatively limited. Fieldwork has confirmed that locations from which the proposed Development would be a noticeable feature in the landscape are likely to be confined to areas within less than 2 km of the Site.

*Landscape assessment*

4.158 During the construction phase (including Year 1 of operation) significant landscape effects are identified with respect to the character of the Site itself but not the landscape units considered as part of the assessment. Overall impact on the site character at this stage are considered to be up to moderate - substantial adverse, and significant, given the alteration to the current baseline. Impacts on landscape character units during the construction phase and at completion are considered to be not significant (up to slight adverse).

4.159 During the long term of the operational phase, the site wide green infrastructure (new and existing) will grow and mature such that there would continue to be no significant adverse effects on landscape elements or character. There would be beneficial impacts resulting from the increase in planting and ongoing management of the landscape. Overall, it is considered that long term impacts at the site level would be moderate adverse (not significant) and impacts on surrounding landscape character areas up to slight adverse (not significant) – imperceptible.

*Visual assessment*

4.160 During the construction phase (including Year 1 of operation) significant effects on visual amenity (up to **substantial** adverse) are predicted only for recreational users of the permissive footpath between Kippax Meadows and Woodland Croft. Elsewhere, effects would no greater than moderate adverse (not significant). For residential receptors, up to **substantial** adverse effects (significant) would be experienced by occupants of only a small number of properties on the southern edge of Kippax who may experience a similar view of the Site to that from the adjacent footpath just described. Elsewhere, there may be a **moderate – substantial** adverse effect on Home Farm. This would also be significant. Effects on other visual receptors would be no greater than moderate adverse In the longer term, the provision of new planting within the Site (along field boundaries) will contribute to a reduction in levels of residual effect on visual amenity, to below significant levels for all receptors.

**Green Belt**

4.161 As mentioned in the policy summary outlined previously in the Methodology section at the start of this report, the Site lies within the Leeds Green Belt. This is a planning policy rather than a landscape designation per se, although clearly landscape and visual impacts should be considered as part of the assessment of the proposed Development in relation to Green Belt policy.

4.162 In relation to land designated as Green Belt, openness can relate to the facility for open and long-distance views as well as to a lack of built development. The viewpoint photographs included in this LVIA illustrate representative viewpoints from areas around the Site. They illustrate that the proposed Development is unlikely to be visible from most locations within the surrounding area and would not screen views of the landscape beyond it. This is a function of topography of the area, combined with the

low height of the panels (maximum ~3.5 m above ground, therefore lower than most other types of built development) and the extensive screening of the Site provided by surrounding trees, hedgerows and woodland. The photomontages used to illustrate the potential views of the proposed Development from the surrounding area demonstrate that it would not screen or otherwise significantly affect views of landscape around and beyond the Site. Therefore, the ability of people to perceive the extent of the Green Belt is not affected by the proposed development as it would not prevent or unduly obstruct views in any direction. Nor would the solar panels affect the ability to understand the underlying landscape surrounding the Site and within the wider study area. The proposed Development would not result in the coalescence of settlements. Adverse visual effects on the residents of settlements within the study area, where these have the potential to occur, would be limited in extent, due to both distance and screening by intervening buildings and vegetation. Therefore, the project would be largely imperceptible in views from settlements and the perception of the openness of the Green Belt would be maintained.

**Overall conclusions**

4.163 The design of the proposed Development has responded to its landscape context by respecting existing structural features (field boundaries, vegetation, etc.) as a setting for development. The strengthening of landscape features through the provision of additional planting will further integrate the proposed development into the surrounding landscape. It is considered that the Site and surrounding area has the capacity to accommodate a development of this nature, which would be contained within the strong boundaries that exist, and that would be added to as part of the development proposals. The introduction of new planting and ongoing management of existing planting will also have a beneficial effect on landscape character in the longer term. Residual effects on the character of the Site and wider landscape of the area would not be significant.

4.164 During construction work and at Year 1 of operation there would be some adverse effects on visual receptors located mostly within 2 km of the proposed site (significant only in the case of users on the permissive footpath between Kippax Meadows and Woodland Croft, located just to the north of the Site), which is to be expected with a development of this nature. However, as the mitigation takes effect and the landscape of the Site grows and matures, in the long term there would be no significant residual adverse effects on the visual amenity of recreational and residential receptors, nor on motorists travelling on the local road network.

4.165 Following decommissioning of the Site, the land would be returned to agricultural use and the mitigation planting would continue to make a contibution to local landscape character and green infrastructure resources.