



BICKER FEN SOLAR FARM

LANDSCAPE AND VISUAL IMPACT ASSESSMENT

August 2022



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1.0 Introduction

- 1.1.1 This Landscape and Visual Impact Assessment (LVIA) follows best practice guidance set out in *Guidelines for Landscape and Visual Impact Assessment*¹, hereafter referred to as the GLVIA.
- 1.1.2 Landscape and visual effects are separate, although closely related and interlinked issues.
- 1.1.3 Landscape effects are caused by physical changes to the landscape, which may result in changes to the distinctive character of that landscape and how it is perceived.
- 1.1.4 Visual effects are changes to what can be seen by people as a result of what is proposed. A visual assessment assesses the change in visual amenity undergone by people (either individually or in groups) that would arise from any change in the nature of views experienced.
- 1.1.5 In accordance with the guidance set out in the GLVIA, the LVIA adopts an approach proportionate to the likely significant effects of the Proposed Development. The conclusions of the LVIA have been determined via use of professional judgement, set within a structured assessment framework, and supported by reasoned justification.
- 1.1.6 The LVIA aims to establish the following:
- A clear understanding of the Site and its context, in respect of the physical and perceived landscape and in respect of views and visual amenity;
 - An understanding of the Proposed Development in terms of how this would relate to the existing landscape and views;
 - An identification of the likely significant effects of the Proposed Development upon the landscape and upon views, throughout the life-cycle of the Proposed Development;
 - Potential for mitigation to reduce / eliminate any potential adverse effect on the landscape or views arising as a result of the Proposed Development; and
 - A conclusion as to the residual likely significant landscape and visual effects of the Proposed Development.

¹ Landscape Institute and Institute for Environmental Management and Assessment, 3rd edition 2013. *Guidelines for Landscape and Visual Impact Assessment*. Abingdon: Routledge.

1.1.7 The process follows a standard approach, namely:

- The establishment of the baseline conditions, against which the effects of the Proposed Development will be assessed;
- The determination of the nature of the receptor likely to be affected, i.e. its sensitivity;
- The prediction of the nature of the effect likely to occur, i.e. the magnitude of change; and
- An assessment of whether a likely significant landscape and visual effect would be experienced by any receptor, by considering the predicted magnitude of change together with the sensitivity of the receptor, taking into account any proposed mitigation measures.

1.1.8 Further details regarding the specific methodologies of assessment and determination of significance are included in Appendix 1. The LVIA has been informed by both desk and field based studies.

1.1.9 It should be noted that the landscape (including the context in which views are experienced) is dynamic, i.e., it is affected by social, economic, technological and climatic changes, all of which can influence patterns of land use, land cover and land management. As such, the baseline context for the LVIA is not static.

Competence

1.1.10 The LVIA was undertaken by a Chartered Member of the Landscape Institute (CMLI) with over fifteen years' post qualification experience in the landscape and visual assessment of major infrastructure projects. The LVIA was directed and reviewed by a second CMLI with over twenty-five years' similar experience.

2.0 Proposed Development

2.1.1 The Proposed Development is described in detail in the Planning and Design and Access Statement and illustrated on the accompanying Planning Drawings. In summary, the Proposed Development would have an operational life of forty years, and would comprise:

- Photovoltaic Solar Panels and associated support frames;
- 22 No. Solar Inverter/Transformer Stations;
- 38 No. Battery Storage Containers;

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- 9 No. Battery Inverter/Transformer Stations
 - 1 No. Storage Containers;
 - 1 No. Solar Switchgear Building;
 - 1No. Battery Switchgear Building
 - 1 No. Solar Control Room Building;
 - 1 No. Battery Control Room Building;
 - c. 4760km of new/resurfaced access tracks;
 - Ditch culverts for track crossings;
 - 1.No. 3.0m wide by 1.8m high box culvert crossing of Hammond Beck;
 - Perimeter deer/stock fencing;
 - c.40 No. 4m High CCTV cameras;
 - c. 20,725m² Woodland Planting, and
 - c. 8,520 m hedgerow planting (new and gapping up of existing).

2.1.2 The landscape proposals that would form part of the Proposed Development are illustrated indicatively on Drawings 2920-01-03. The proposals include the planting of new native hedgerow around the Site perimeter, and new native woodland belts along more sensitive sections of the Site perimeter (such as close to residential properties). The new hedgerows would be maintained at a height of approximately 3m-3.5m. Planting would typically comprise 40-60m high whips. Within the proposed woodland belts, larger stock (a combination of feathered and standard trees) would also be planted to provide initial screening benefit close to residential properties.

2.1.3 Species-rich grassland would be seeded outside the perimeter fencing and along the margins of selected drainage ditches, access tracks, and tree belts as indicated on Drawings 2920-01-03. The remainder of the Site would be seeded with a low maintenance grass mix suitable for grazing. During the forty-year operational life of the Proposed Development, the Site would be grazed by sheep and/or mown. Following decommissioning, the Site would be returned to arable use.

3.0 Methodology

Legislation and Guidance

- 3.1.1 Details of the planning and policy background for the proposal, including an appraisal of effects on relevant landscape-related policies, as set out in the adopted Statutory Development Plan, are included in the Planning Supporting Statement. Key legislation and policies relevant to the LVIA are summarised below.

European Landscape Convention

- 3.1.2 The UK Government is a signatory of the European Landscape Convention (ELC), which became binding in March 2007. The Convention is aimed at the protection, management and planning of all landscapes and raising awareness of the value of a living landscape. It relates chiefly to public bodies and to the policies, plans and programmes produced by these.
- 3.1.3 The LVIA is a development specific process which accords with Article 6C of the ELC. The LVIA is informed by extant Landscape Character Assessment studies (described in Section 4 below), which more directly relate to the provisions of Article 6C.

Planning Policy

- 3.1.4 For details of relevant planning policies, refer to the Planning and Design and Access Statement.

Assessment Methodology

- 3.1.5 As noted in Section 1, this LVIA has followed a methodology which has been developed using the published good practice guidelines set out in the GLVIA. The detailed methodology followed in undertaking the LVIA is set out in Appendix 1.
- 3.1.6 The LVIA also follows the Landscape Institute's current guidance regarding the production of visualisations². The methodology followed in the production of visualisation material is set out in Appendix 2.

² Landscape Institute, 2019. *Visual Representation of Development Proposals. Technical Guidance Note 06/19*

The Study Area

- 3.1.7 Both the curvature of the earth, and the refraction of light through the atmosphere influence what can be seen from any given location. Guidance produced by NatureScot (formerly Scottish Natural Heritage)³ in relation to wind farm visualisations, includes a formula that can be used to determine visibility in a flat landscape, as follows:

$$h = \frac{c^2 (1-2k)}{2r}$$

where: h is the height correction in m
 c is the distance to the object in m
 k is the refraction coefficient (NatureScot state 0.075 as a reasonable average)
 r is the radius of the Earth in m (NatureScot state 6,367,000m)

- 3.1.8 Using the formula above, it can be determined that in a flat landscape, the vertical correction for a 3.0m high solar panel is approximately 6.76km. I.e. the panels would not be theoretically visible beyond this distance when viewed from a similar elevation.
- 3.1.9 The ZTV of the Proposed Development as illustrated on Figures 2a-b and described in more detail in Section 3 below and in Appendix 2, shows that the theoretical visibility of the proposed solar panels would be very localised. On the basis that the LVIA is concerned with significant landscape and visual effects, rather than identifying every location from which the Proposed Development could theoretically be visible, a Study Area with a radius of 2.5km from the Site boundary has been adopted. The extent of the Study Area is indicated on Figures 1 and 2a-b.

Scope of Assessment

- 3.1.10 Pre-application consultation was undertaken with Boston Borough Council (BBC) and South Holland District Council (SHDC). The scope of the LVIA, including viewpoint locations was agreed as part of this process.

Assessment of Significance / Assessment Criteria

- 3.1.11 Not all landscape and visual effects arising as a result of a particular proposal will be significant. Furthermore, where likely significant effects are predicted, this does

³ Scottish Natural Heritage, 2017. *Visual Representation of Wind Farms version 2.2*. Annex D (page 49).

not automatically mean that such effects are unacceptable. The acceptability of landscape and visual effects is a matter to be weighed in the planning balance alongside other factors. What is important is that the likely effects of any proposal are transparently assessed and described in order that the relevant determining authority can bring a balanced and well-informed judgement to bear as part of the decision-making process.

- 3.1.12 The judgement in relation to this LVIA is that a greater than 'moderate' level of effect is more likely to be significant. This is because such an effect would generally result from larger magnitudes of change on higher sensitivity receptors. This does not preclude a 'moderate' effect or lower being significant, or a greater than 'moderate' effect not being significant. The professional judgement made will depend on the specific circumstances being considered. Refer to Appendix 1 for further details.

Limitations

- 3.1.13 Assessment work reflects the level of vegetation cover present at the time of the field visits to the Study Area (early November 2021), with deciduous vegetation still largely in leaf. Where relevant to its conclusions, the LVIA makes assumptions as to the likely visibility of the Proposed Development at other times of year.

4.0 Baseline

Data Collection

- 4.1.1 Baseline data for the LVIA has been gathered by both desk and field based surveys. These have included review of extant landscape character assessment studies (see below) and field visits to gain an understanding of the landscape and visual context of the Site.

The Site and its Surroundings

- 4.1.2 The Site of the Proposed Development is located within farmland approximately 480m north of Northope, approximately 1.2km west of Bicker, and approximately 1.25km north of Donington. The Site would occupy an area of approximately 92 hectares. The location of the Site is illustrated on Figures 1 and 2a-b.
- 4.1.3 The Site comprises a series of arable fields, which together comprise four distinct parcels of land. The majority of boundaries are open, with only drainage ditches to

delineate them. An overhead transmission line crosses the Site, and a pylon is located within the Site boundary. The landform is very flat and low-lying. Minor roads allow access, with Cowbridge Road skirting part of the north-eastern boundary, and North Ing Drove skirting part of the southern boundary.

- 4.1.4 Settlement is concentrated in the villages of Bicker, Northorpe and Donnington in the east and south-east of the Study Area. Elsewhere, only scattered farm properties are present.
- 4.1.5 There are several properties located adjacent or very close to the Site boundary at Beck Cottage, an unnamed property at North Fen, Ing Farm, The Haven, The Bungalow, and Cowbridge Farm (with an adjacent property also called The Bungalow). A further thirty-three properties are located within approximately 500m of the Site boundary. Twenty of these (Nos. 13-49 Northope Road) are located in close proximity to one another at the edge of Northope. The majority of the nearby properties have relatively open views looking in the direction of the Site. At some properties, vegetation at their perimeter largely restricts such views. Refer to Figures 2a-b for locations.
- 4.1.6 The public rights of way network within the Study Area is relatively sparse. A public footpath follows the Hammond Beck, which is a watercourse running along part of the Site boundary. The footpath shows little signs of use, and sections of it are overgrown with dense grasses. The Cross Britain Way long distance route follows North Ing Drove to the south of the Site. Refer to Figures 2a-b for locations.
- 4.1.7 The Bicker Wind Farm is located to the west of the Site. This development comprises 13 no. wind turbines which are widely visible in the flat landscape. A proposal to develop a 49MW solar farm at Vicarage Drove adjacent to the wind farm was approved by Boston Borough Council in February 2022. Refer to Figure 1 for locations.
- 4.1.8 Immediately east of the wind farm is the Bicker Fen National Grid Substation. The Substation is partially enclosed by woodland, but some of the structures within it can be seen from the surrounding area. A second substation located north of the wind farm provides a connection to the Triton Knoll offshore wind farm (substation construction completed in October 2021). Refer to Figure 1 for locations.
- 4.1.9 The Viking Link is a major construction project located west of the Site and will once completed link the national grids of the UK and Denmark. The UK terminus of the

project is due south of the wind farm and will include two convertor sites (refer to Figure 1 for location). These were under construction at the time of the field visit in November 2021 and were very prominent (although still incomplete) structures. A large construction compound was present at the convertor sites, and the construction access road running southward from this was also evident in the landscape.

- 4.1.10 The South Forty Foot Drain runs north-south approximately 1.34km west of the boundary. This is an artificial watercourse, constructed in the early modern period as part of a scheme to drain the Fens, with engineered banks on either side. There are few bridges, and one cannot easily cross from the public rights of way network east of the Drain to that on the western side. Within the flat landform, the engineered banks also form a visual barrier.

Landscape Designations

- 4.1.11 The Study Area is not subject to any statutory or non-statutory landscape designations.

Landscape Character Assessment and Other Studies

National Character Areas

- 4.1.12 159 National Character Areas (NCA) have been identified across England by the former Countryside Commission (now Natural England). Their broad geographic reach means that the key characteristics identified as typical of a particular character area may not necessarily apply to a specific location within that character area. The entirety of the Study Area is located within NCA46: The Fens⁴.

Regional Character

- 4.1.13 The *East Midlands Regional Landscape Character Assessment*⁵ identifies a series of regional landscape character types (RLCT). The Site overlaps the boundary between RLCT 2a: Settled Fens and Marshes and RLCT2b: Planned and Drained Fens and Carrlands (refer to Figure 1 for locations).
- 4.1.14 Key characteristics of RLCT2a include:

⁴ Natural England. 2014. *National Character Area profile: 46 The Fens*. Available at < <https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles> > [accessed 10 Sep 2021]

⁵ LDA Design, 2010. *East Midlands Regional Landscape Character Assessment*.

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- Low lying, flat and open landscape with wide horizons and panoramas encompassing vast skies;
 - Fertile soils supporting highly productive arable farming with limited biodiversity interest;
 - Successive periods of enclosure creating local variations in character from organic late Saxon enclosures to rigid 19th and 20th century geometric field systems towards the coast;
 - Field boundaries predominantly defined by wet dykes, sea walls, roads and canalised rivers; few hedgerows, hedgerow trees and woodlands;
 - Large farm buildings and glass houses often associated with industrial scale agricultural and horticultural operations; and
 - Coastal seaside resorts with large areas of static caravans and associated facilities contrast to productive farmland and remote countryside elsewhere.

4.1.15 Key characteristics of RLCT2b include:

- Consistently low lying terrain and simple palette of land uses and landscape features gives visual unity and strong sense of identity;
- Large scale open landscape of flat farmlands with extensive and uninterrupted vistas to distant horizons beneath vast skies;
- 18th and 19th century enclosure characterises historic landscape patterns underpinned by complex history of drainage and enclosure stretching as far back as the late Saxon period in some places;
- Significant areas at or below sea level, with modestly elevated areas acting as the focus of settlement;
- Hierarchy of canalised rivers, high level drains and ditches divide the landscape up into rigid geometric patterns, dictating the grain of the landscape and patterns of movement and settlement;
- Limited settlement pattern characterised by isolated farms and linear villages strung out along roads; majority of buildings in brick with tile roofs, further adding to uniform character of the landscape;
- Rich and varied arable land uses, root crops, bulbs, vegetables and horticultural glass houses give the landscape a highly productive character and seasonal variations in colour and texture; and
- Strong sense of remoteness in expansive and sparsely settled areas although periods of intense activity during harvest.

District Character: Boston

4.1.16 The *Landscape Character Assessment of Boston Borough*⁶ (the Boston Study) subdivides the Borough into a series of landscape character areas. That part of the Site within Boston Borough is located in Landscape Character Area B1: Bicker to Wyberton Settled Fen, adjacent to the boundary with Landscape Character Area A1: Holland Reclaimed Fen. Relevant extracts from the Borough Study are included as Appendix 3a, and locations are illustrated on Figure 1.

4.1.17 Key characteristics of Landscape Character Area B1 include:

- A largely flat landform slightly elevated above the adjacent drained fenland;
- Open views with big skies;
- Views to landmark water towers, and church towers and spires set amongst mature trees in historic villages. Other visible landmarks include the windfarm at Bicker and Boston Stump;
- An intact working rural landscape;
- Settlement pattern of widely spread villages, often medieval in origin, with farmsteads and dwellings scattered in between;
- Scattered agricultural buildings, horticultural glasshouses, packing sheds, poultry sheds, food processing plants and distribution centres which are of a mix of styles and ages;
- A relatively large scale organic network of winding roads is infilled by a geometric field pattern of predominantly arable fields;
- Generally tree cover is sparse with occasional hedgerows and hedgerow trees and infrequent blocks of mixed woodland;
- A scattering of visible heritage features with archaeological earthworks including medieval moated sites and saltern mounds, Listed Buildings and some designated Conservation Areas within historic villages;
- Towards the outskirts of Boston there are more modern influences including converging rows of large scale pylons and new recreational sites;
- A distinctive, cohesive and legibly evolving agricultural landscape, which is peaceful in parts but not particularly remote.

4.1.18 Key characteristics of Landscape Character Area A1 include:

⁶ ECUS, 2009. *Landscape Character Assessment of Boston Borough*. Boston Borough Council

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- Flat and low-lying reclaimed fenland;
 - Open and expansive views with big skies and dark night skies with some views semi-enclosed at ground level by large embankments;
 - More distant views to Boston Stump and to the Lincolnshire Wolds in East Lindsey District to the north;
 - A man-made intensive arable landscape laid out in a regular, geometric pattern with narrow roads and trackways alongside drains, dykes and ditches;
 - The large North Forty Foot Drain and South Forty Foot Drain are key dominating features of the area;
 - Field boundaries are typically open with wet ditches, dykes and drains and the occasional hedgerow;
 - Occasional large scale horticultural glasshouses, and packing or processing plants occur near the southern boundary of the area;
 - Sparsely populated with occasional small hamlets, scattered farmsteads, and occasional rows of former workers' cottages;
 - Occasional derelict farm cottages and field buildings;
 - Sparse tree cover confined to shelterbelts, with occasional hedgerows and small blocks of mixed woodland with shrubby edges;
 - Bicker windfarm and large scale pylons on the south western tip are modern landmark features;
 - A semi-remote, tranquil and intact working agricultural landscape.

District Character: South Holland

4.1.19 The *Strategic Capacity Study for South Holland*⁷ (the South Holland Study) was produced to inform planning guidance relating to wind farms. The South Holland Study identifies three landscape character types (LCT) within the District. The LCTs are not development specific and hence are applicable to this LVIA. That part of the Site within South Holland overlaps the boundary between the Settled Fens LCT and the Peaty Fens LCT. Relevant extracts are included as Appendix 3b, and locations are illustrated on Figure 1. Key characteristics are not defined for the LCTs.

⁷ John Campion Associates, 2003. *Strategic Landscape Capacity Study for South Holland District Council*

District Character: North Kesteven

4.1.20 The *North Kesteven Landscape Character Assessment*⁸ identifies a series of landscape character areas. The western part of the Study Area is located with landscape character sub-area 13: Fenlands (refer to Figure 1 for location). Key characteristics of landscape character sub-area 13: Fenlands include:

- The Fenland landscape sub-area occupies the whole of the eastern part of the District from the Lincoln gap to the boundary with south Kesteven near Swanton;
- Low lying with very flat relief;
- Occasional small islands of slightly higher land;
- Very large, rich arable fields divided up by drainage channels;
- A hierarchy of rivers drains and ditches creating linear patterns across the landscape;
- The geometric road pattern follows the drainage pattern with small roads raised above the level of the fields, running from west to east;
- Generally extensive vistas to level horizons and huge skies, apart from in the north easterly direction where the Lincolnshire Wolds provide a marked “Upland” horizon;
- Sparse woodland cover though some occasional trees surrounding farmsteads and some shelter belts particularly of poplars;
- Intensively farmed and managed it is almost entirely a man-made landscape;
- Except for scattered farmsteads and farm buildings the sub-area is unsettled;
- Prominent power lines and large-scale agricultural buildings.

Summary

4.1.21 The landscape character of the Study Area has been classified at national, regional district/ borough levels. The district/ borough-level classifications are the finest grain of all the various characterisation documents discussed above, and these form the basis for the assessment of effects on landscape character (as set out in Section 5 below).

4.1.22 It should however be recognised that whilst the Study Area extends across the boundaries of three separate local authorities, character does not change to any

⁸ David Tyldesley and Associates, 2007. *North Kesteven Landscape Character Assessment*. North Kesteven District Council

notable degree at the boundaries. Additionally, there is no clear 'on the ground' transition between the individual character areas.

4.1.23 Effects are not therefore identified for each character area individually. Rather, effects have been assessed based upon the landscape of the Study Area as a whole, recognising the consistent landscape character of this area, whilst having regard to the contents of the individual borough/ district classification documents.

4.1.24 The assessment is also informed by any changes in the landscape subsequent to the publication of the borough/ district level classifications, and any 'in the field' observations that reflect the actual contemporary character of the Study Area. Full regard is also had to the contents of the other higher-level characterisation documents.

Future Landscape Change

4.1.25 In the absence of the Proposed Development, it is considered that the Site would continue in its current state, i.e. in arable use, with energy infrastructure located nearby (in close proximity to the National Grid Substation).

Visual Baseline

ZTV

4.1.26 Zone of Theoretical Visibility (ZTV) mapping has been used to identify the extent of the visibility of the Proposed Development. The ZTVs reflect the theoretical visibility of the proposed solar panels (at a height of 3.0m above the existing ground level), with and without the proposed planting described in Section 1 above (note the ZTVs do not take account of larger stock planted in the proposed native woodland belts).

4.1.27 The ZTVs have been produced using a commercial 2m Photogrammetric Digital Surface Model (DSM) obtained from Bluesky International. This is derived from aerial photography and takes account of existing screening features such as vegetation, buildings and other structures. This allows a relatively realistic prediction of the visibility of the Proposed Development to be made, but does treat vegetation as a solid feature, when in reality views can sometimes be available through leaves and branches.

4.1.28 A series of markers (278 no.) representing the solar panels were added across the area where the panels would be sited. The ZTVs are presented on Figures 2a-b.

Colour banding is used to differentiate between locations where more, or fewer solar panels (based on the markers) would be visible.

4.1.29 Appendix 2 provides details of the methodology followed in producing the ZTVs.

Viewpoints

4.1.30 The LVIA includes a detailed assessment of visual effects from nine viewpoints. The locations of the viewpoints are shown on Figures 1 and 2a-b. As noted in Section 3, locations were agreed with BBC and SHDC. The precise location of each viewpoint was determined on site.

4.1.31 Viewpoints can fall into three categories, as set out in the GLVIA:

- Representative viewpoints (which represent the experience of different types of receptors in the vicinity);
- Specific viewpoints (a particular view, for example a well-known beauty spot);
- Illustrative viewpoints (which illustrate a particular effect / issue, which may include limited / lack of visibility).

4.1.32 It should be noted that the viewpoint itself is not the receptor; rather it is the people that would be experiencing the view from the viewpoint. Receptors in the vicinity of the Site that are likely to experience views of the development include:

- Residents in nearby properties;
- Users of public rights of way and other routes / land with public access; and
- Road users.

4.1.33 The viewpoints included in the LVIA are set out in Table 1.

Table 1 Viewpoint Locations

Viewpoint	British National Grid Co-ordinates	Viewpoint Details
1: Friest Lane, Bicker	522233, 337203	<i>Representative</i> of views available to local residents
2: Day's Lane, Northorpe	520805, 336792	<i>Representative</i> of views available to local residents
3: Northorpe Road/ Cross Britain Way	520111, 336775	<i>Representative</i> of views available to walkers and road users
4: Public bridleway	517897, 337883	<i>Representative</i> of views available

Viewpoint	British National Grid Co-ordinates	Viewpoint Details
Doni/16/2		to bridleway users
5: Cowbridge Road	520708, 338739	<i>Representative</i> of views available to road users
6: Junction of Cowbridge Road with Ing Drove	521410, 337824	<i>Representative</i> of views available to road users
7: Junction of A52 Bicker Road with Day's Lane	521700, 336655	<i>Representative</i> of views available to local residents and road users
8: Public footpath Bick/2/1	520318, 338521	<i>Representative</i> of views available to walkers
9: North Ing Drove/ Cross Britain Way	518873, 336946	<i>Representative</i> of views available to walkers and road users

4.1.34 Figures 3a-i include visualisations from each of the Viewpoints. Each figure has been prepared in accordance with current best practice guidance⁹, and a detailed methodology describing how they have been produced is included in Appendix 2. Baseline photography is provided from each viewpoint, which is annotated where deemed appropriate to highlight key features.

4.1.35 Photomontages illustrating how the Proposed Development would appear are also included on some of the Figures. Photomontages have been prepared from selected viewpoints (Viewpoints 2, 6 and 9) illustrating how the view looking towards the Site would change from a series of different directions. The photomontages illustrate how the Proposed Development would appear immediately after opening, and also demonstrate how the proposed landscape improvements would help screen the Proposed Development once new vegetation has had time to establish (approximately 5 years after planting).

5.0 Assessment of Effects

Incorporated Mitigation

5.1.1 A series of measures have been incorporated into both the design of the Proposed Development and the drawing up of the construction and operational procedures, which are intended to provide embedded mitigation against potentially adverse landscape and visual effects and other environmental effects. These measures include:

⁹ Landscape Institute, 2019. *Visual Representation of Development Proposals. Technical Guidance Note 06/19*

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- Planting of new native hedgerows and new native woodland belts around the Site perimeter, to help screen views of the new structures from the surrounding area, and to enhance biodiversity;
 - New planting would enclose the built structures in a similar fashion to other electricity infrastructure developments locally, and would therefore reflect current trends in the landscape;
 - New areas of species-rich grassland created to enhance biodiversity;
 - The development of an 'on demand' external security and maintenance lighting system in accordance with best practice measures, which would minimise the generation of obtrusive light/ light spillage when in use; and
 - The implementation of a project-specific Construction Environmental Management Plan (CEMP), which would govern construction activities, and would include measures to protect existing vegetation and control construction lighting.

5.1.2 The landscape and visual effects of the Proposed Development (as assessed below) thus relate to a project that has benefited from mitigation by design.

Construction Phase

Overview

5.1.3 Construction would be managed in accordance with a CEMP, setting out how environmental issues would be managed in compliance with any particular limitations imposed by the planning permission, as well as in compliance with relevant legislation, regulations and best practice guidance. This is explained in more detail in the Planning and Design & Access Statement.

5.1.4 Items to be addressed by the CEMP that pertain to landscape and visual effects are likely to include:

- Measures for ensuring the successful retention of existing vegetation (for example, use of protective fencing);
- Measures taken to limit the effects of temporary construction lighting;
- Approximate protocols governing the establishment of the temporary contractor's compound(s), to reduce any potential adverse effects upon the amenity of the surrounding area).

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- 5.1.5 Construction would, by necessity, require the use of specialist vehicles and other plant, some of which would be readily apparent by virtue of their colour, size or movement. In particular, cranes used to install the Inverter-Transformer stations would be particularly visible due to their height. However, these would only be on Site for a small number of days.
- 5.1.6 The timing and phasing of the different elements of construction are not known in detail. The LVIA assumes the Proposed Development would take approximately thirty-six weeks to build and commission. Different activities would take place at different times during this period and, as such, construction effects would vary over time and would not occur on a consistent basis throughout the construction stage, but rather are likely to vary in intensity with specific effects of shorter duration occurring.
- 5.1.7 Temporary lighting may be required to ensure the health, safety and welfare of those on Site during poor light conditions, and in particular at the beginning and end of the working day in winter. This would require mobile task lighting. Some use of low level lighting of compounds for security purposes may be required through the night. Potential for adverse effects upon amenity arising from such lighting would, as stated above, be addressed by the CEMP.

Construction Effects

- 5.1.8 Temporary construction compounds would be required and these would be located within the Site boundary. There would be some loss of arable farmland to accommodate the two compounds, but this would be reinstated post-construction and would subsequently be grazed.
- 5.1.9 Construction activities would take place in the context of existing periodic movements of large farm vehicles in the local landscape. Construction activity at the Viking Link convertor site is also currently a familiar presence, although one that will cease once the convertors are built.
- 5.1.10 Construction activities would be temporary and intermittent in nature, having only a limited influence upon the character of the wider landscape outside the Site and upon views beyond the site boundary. The increased presence/ movement of staff, plant and machinery would have obvious effects on views for users of sections of the adjacent minor road network (Cowbridge Road and North Ing Drove) and the footpath running along the Site boundary, and for residents at Beck Cottage, the

unnamed property at North Fen, Cowbridge Farm (all of which are located adjacent to the Site boundary), Ing Farm, The Haven, The Bungalow (all located on Ing Road close to Site boundary), The Northings and The Old Barn (both located on North Ing Drove close to the Site boundary). These would represent a significant, although localised and temporary change to the existing views during the thirty-six week construction period. The CEMP would include provisions for public communication to inform local residents and footpath users about construction activities at the site.

- 5.1.11 Night-time construction effects resulting from lighting would be limited and would not be significant. Lighting would generally not be present outside of normal working hours, other than low-level security lighting triggered by motion sensors, and the CEMP would include measures to minimise any effects on amenity.

Operational Phase: Landscape

Landscape Fabric

- 5.1.12 The existing landscape fabric comprises arable farmland, subdivided by a series of drainage ditches. Areas of rough grassland run along the side of the ditches. Vegetation of this type is commonplace locally and could be recreated easily if necessary. Both susceptibility to change and value are low, and overall sensitivity is also low.
- 5.1.13 The Proposed Development would introduce new solar panels and associated infrastructure, thereby removing the Site from arable use. Existing ditches would be protected by ensuring an approximately 5m to 6m buffer on either side depending on the ditch size. New native hedgerows and native woodland belts would be planted around the Site perimeter, with the hedgerows maintained at a height of approximately 3m-3.5m.
- 5.1.14 During the operational life of the Proposed Development, grazing by sheep would be introduced in combination with mowing/strimming. This would maintain the agricultural usage of the Site, albeit the pasture grassland would be relatively static compared constantly changing landscape fabric associated with arable crop rotation.
- 5.1.15 A minor effect on the farmland within the Site would occur, associated with the change from arable use to pasture or mowing activities. Change would be reversible following decommissioning, and the land could be returned to arable use. As such, effects on the underlying landscape fabric would not be significant.

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- 5.1.16 The introduction of new lengths of hedgerow and new woodland belts would have a beneficial effect in respect of the landscape fabric of the area and would be retained following decommissioning. The new species-rich grassland seeding would also have a beneficial effect during the operational life of the solar farm.

Landscape Character

- 5.1.17 A detailed assessment of effects upon landscape character within the Study Area is set out in Appendix 3. The conclusions regarding effects on landscape character are summarised below.
- 5.1.18 As noted in Section 4, the Site of the Proposed Development overlaps the boundaries of four separate landscape character areas identified by BBC and SHDC. In reality, there is no obvious change in character in the vicinity of the Site, and the landscape of the Study Area is relatively consistent in character, with variation occurring only towards the edges of the Study Area further from the Site.
- 5.1.19 The Proposed Development would introduce solar panels and associated infrastructure into the Site. Electricity generation and supply infrastructure, including renewable energy is an established influence locally (e.g. the Bicker Wind Farm, the Triton Knoll Offshore Substation, and the Viking Link Converter), and there is a clear trend for further such development to be located locally (e.g., the consented Vicarage Drove Solar Farm, and the proposed Little Hale Fen Solar Farm). The Proposed Development would accord with this trend.
- 5.1.20 In the medium and longer term, the planting of new hedgerows and woodland belts would provide visual screening, and the influence of the new structures would therefore reduce. The new planting and new species-rich grassland would enhance biodiversity locally. The new planting would also increase the level of enclosure within the landscape locally, which would reflect current trends to enclose electricity infrastructure with planting.
- 5.1.21 There would be some localised change in character, particularly initially as the new solar panels and associated features are introduced but change from baseline would be limited. Effects would be minor to moderate adverse and would not be significant. The associated landscape proposals would have a beneficial effect as new planting establishes.

Operational Phase: Visual

ZTV

- 5.1.22 The ZTVs presented on Figures 2a-b illustrate the extent of the theoretical visibility of the proposed solar panels, and also how the proposed mitigation planting would reduce visibility in the medium and long term.
- 5.1.23 Figure 2a presents the unscreened ZTV and shows that visibility would be concentrated within the area bounded by Cowbridge Road to the north and north-east, by North Ing Drove to the south, and by the South Forty Foot Drain to the west, with visibility reducing appreciably outside of this area. Outside of the Site boundary, the areas with the greatest amount of visibility predicted would be the land to the west, with visibility reducing to the east where a greater amount of vegetation cover is present.
- 5.1.24 Figure 2b presents a ZTV that takes account of the landscape proposals. Proposed vegetation is shown at a height of approximately 3m, which is likely to be reached by approximately five years after planting. The proposed hedgerows would be maintained at this height, but the proposed woodland belts would continue to grow, and hence screening in the longer-term is likely to be greater than that shown on the Figure. The overall extent of visibility would not reduce greatly from that experienced initially, but the proportion of the proposed solar panels that would be visible would reduce substantially as a result of the proposed planting. Additionally, the woodland belts would include larger stock planted initially.
- 5.1.25 By Year Five, visibility would seldom be greater than 40% of the Proposed Development, even within the Site itself. Scattered areas to the south-west would have theoretical visibility of between 40% and 60% of the Proposed Development, but this would occur in the area where the Viking Link convertor stations are being constructed and may not therefore be available once these structures are built, and restrict some views towards the Site. In the medium and longer-term less than 20% of the Proposed Development is predicted to be visible from the majority of the Study Area.

Viewpoints

- 5.1.26 A detailed assessment of visual effects from each Viewpoint is set out in Appendix 4. A significant visual effect would be experienced initially at one viewpoint, reducing to non-significant levels as proposed planting establishes. The remaining

eight viewpoints would experience visual effects that are not considered to be significant given the context of the existing and evolving views. The results of this assessment are summarised below.

- 5.1.27 At Viewpoint 8: Public Footpath Bick/2/1, a moderate to major adverse effect would occur initially, and this effect would be significant. This Viewpoint is located along a public right of way adjacent to the Site boundary. The new solar panels and ancillary structures would be introduced at close range and would be clearly visible from the Viewpoint. Whilst existing electricity infrastructure is already prominent, the influence of such infrastructure upon the view would undergo a clear increase as a result of the Proposed Development.
- 5.1.28 However, once proposed perimeter planting becomes established, the visibility of the new structures would reduce considerably due to the screening provided by the new vegetation. The influence of vegetation cover upon the view would increase, as would the level of visual enclosure. The influence of built development would reduce appreciably once the planting establishes, after approximately five years. Medium and long-term effects at Viewpoint 8 would be moderate adverse and would not be significant.
- 5.1.29 At Viewpoint 9: North Ing Drove/ Cross Britain Way, initial visual effects would be moderate adverse. This viewpoint is located on the minor road south-west of the Site, from where views towards the Proposed Development would be open and not obscured by any vegetation cover. The influence of development upon views across the flat, low-lying fenland landscape would increase. In the medium and longer-term, once proposed new planting at the Site perimeter has established, this vegetation would largely screen the new structures from view. Effects would reduce to minor adverse. Effects would not be significant.
- 5.1.30 At Viewpoint 5: Cowbridge Road and Viewpoint 6: Junction of Cowbridge Road with Ing Drove, visual effects would be minor to moderate adverse initially. These viewpoints are all located at points along the minor road network, north-east of the Site, from where views towards the Proposed Development would be relatively open but where some existing features do intervene. The influence of development upon views across the flat, low-lying fenland landscape would increase. In the medium and longer-term, once proposed new planting at the Site perimeter has established, this vegetation would largely screen the new structures from view,

reducing the amount of the development that is likely to be visible, and effects would reduce to minor adverse. Effects would not be significant.

- 5.1.31 At Viewpoint 2: Day's Lane, Northorpe, and Viewpoint 3: Northorpe Road/ Cross Britain Way, effects would be minor to moderate adverse initially. These two viewpoints are located along the minor road to the south of the Site, in locations where existing pylons and wind turbines are prominent. The influence of electricity infrastructure upon the view would increase incrementally as a result of the presence of the new solar panels and ancillary structures. Over time, as the proposed planting at the Site boundary establishes, views of the new structures would be largely replaced by views of vegetation, and effects would reduce to minor adverse. The views available would remain largely open in character. Effects would not be significant.
- 5.1.32 At Viewpoint 1: Friest Lane, Bicker, effects would be minor adverse. The Proposed Development would be a background feature in a view where electricity infrastructure is already clearly visible on the western skyline. There would only be a very small scale increase in the influence of such development as a result of the new structures. The nature of the view would not change appreciably from baseline. Effects would not be significant.
- 5.1.33 At Viewpoint 4: Public bridleway Doni/16/2, and Viewpoint 7: Junction of A52 Bicker Road with Day's Lane, effects would be minor neutral. At Viewpoint 4, the Proposed Development would be introduced to a context where the Bicker wind turbines and the Viking Link convertor buildings are both located closer to the viewpoint, and which would remain far more prominent than the proposed new structures. At Viewpoint 7, the Proposed Development would be well screened by intervening vegetation and would be a very limited presence in the background. At both viewpoints there would be little change from baseline and the presence of the Proposed Development would neither enhance nor detract from the quality of the existing view. Effects would not be significant.

Pattern of Visual Effects

- 5.1.34 The wider pattern of visual effects is illustrated on the ZTVs presented on Figures 2a-b, and can also be inferred from the assessment of effects upon viewpoints that is summarised above and set out in Appendix 5 (supported by Figures 5a-i). As can be seen by reference to the ZTVs, visibility of the Proposed Development would be localised and the proportion of solar panels visible would reduce with distance.

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- 5.1.35 Initially, the new solar panels and associated structures would be clearly visible at close range. Clear views would be available from the public footpath that runs along the Site boundary (adjacent to Hammond Beck), with the majority of the Proposed Development visible to walkers. Visual effects would be significant initially. As proposed planting establishes, this would screen the majority of the new structures. The new vegetation cover would increase the level of enclosure in the view. Medium and longer-term effects would not be significant. Refer to Viewpoint 8.
- 5.1.36 Clear views at short range would also be visible from stretches of North Ing Drove, Ing Road and Cowbridge Road, and from some of the properties located along these. Properties likely to experience such views include The Old Barn, The Northings, Beck Cottage, the unnamed property at North Fen, 132-134 Northope Road, Cowbridge Farm, Ing Farm, The Haven, the property on Ing Drove called The Bungalow and Strawberry Farm. Garden vegetation may provide some filtering of views from some properties, but the new structures would remain visible. The Cross Britain Way follows the route of North Ing Drove, and walkers would also experience clear short-range views of the Proposed Development. Initially, significant visual effects are likely to be experienced by residents in the properties, and by walkers on a c.500m stretch of the Cross Britain Way in the vicinity of The Old Barns and The Northings. However, as the proposed new planting at the Site boundary establishes (after approximately five years), views of the new structures would be well screened. In particular, visibility from the nearby properties would reduce considerably. There would be some change in view associated with this planting, with the influence of vegetation increasing, but medium and longer-term visual effects would not be significant.
- 5.1.37 Properties at 120 Northorpe Road, Cowbridge Farm and the adjacent property called The Bungalow, and the properties at Kingstree Cottage and Kingstree Lodge would benefit from the considerable screening provided by existing vegetation cover within gardens and at the property boundaries. Visual effects experienced at these properties would not be significant.
- 5.1.38 Motorists travelling along North Ing Drove, Ing Road and Cowbridge Road are less sensitive to change in view, would be moving more quickly and would experience any change in the context of the more prominent wind turbines and Viking Link convertors. As such, the effects experienced by motorists would not be significant (refer to Viewpoints 5 and 9).

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- 5.1.39 From further to the east, at the edges of Bicker and Northorpe, and the minor roads to the west of these villages, the Proposed Development would be less apparent initially, with a smaller proportion of the new solar panels anticipated to be visible. From some locations, a degree of screening would be provided by existing vegetation. The new structures would be limited additions to the middle ground or background of the view and would have little influence upon the nature of the views available across the open fenland fields. Effects would not be significant (refer to Viewpoints 1-3, and 6-7).
- 5.1.40 For users of the Cross Britain Way in general, the Proposed Development would be visible towards the rear of the views northwards from the route in the context of prominent existing wind turbines and (particularly from the route west of the Site) the Viking Link convertors. The new structures would be visible from approximately 5.5km of the route, but other than the approximately 500m stretch referenced above, effects would not be significant. In the medium and longer-term, proposed planting would provide considerable screening of views. Refer to Viewpoints 2, 3 and 9, and also compare Figures 2a and 2b for the change in visibility that would occur approximately five years after planting.
- 5.1.41 The only receptors to the west of the Site would be users of the bridleway that runs along the eastern side of the South Forty Foot Drain. The Bicker wind turbines and the Viking Link convertors are clearly visible and very prominent structures located between the bridleway and the Site. In this context the introduction of the Proposed Development would not have any notable influence upon the views available to bridleway users. Effects would not be significant (refer to Viewpoint 4). The embankments on either side of the watercourse would provide affective screening in the flat landscape, and very little visibility of the Proposed Development is anticipated from west of the South Forty Foot Drain.
- 5.1.42 From locations south of North Ing Drove and north of Cowbridge Road, visibility of the Proposed Development would be fragmented and very limited. Occasional views of a small proportion of the proposed solar panels would occur. This is unlikely to have any influence of note upon the views available, with the Proposed Development comprising a minor background presence at worst, and one that is often likely to be indistinct when seen in the context of intervening vegetation cover and far more prominent existing structures including wind turbines, substations and/or the Viking Link convertors. Effects would not be significant.

Operational Phase: Night-time Effects

- 5.1.43 The Proposed Development would not be lit, (with the exception of on demand security lighting at the Inverter-Transformer Stations and the Control Room/Switchgear Building), once operational, and as such night-time landscape and visual effects would not be significant.

6.0 Mitigation

- 6.1.1 No further mitigation measures are proposed, over and above those embedded into the design of the Proposed Development, which are described in Section 5.

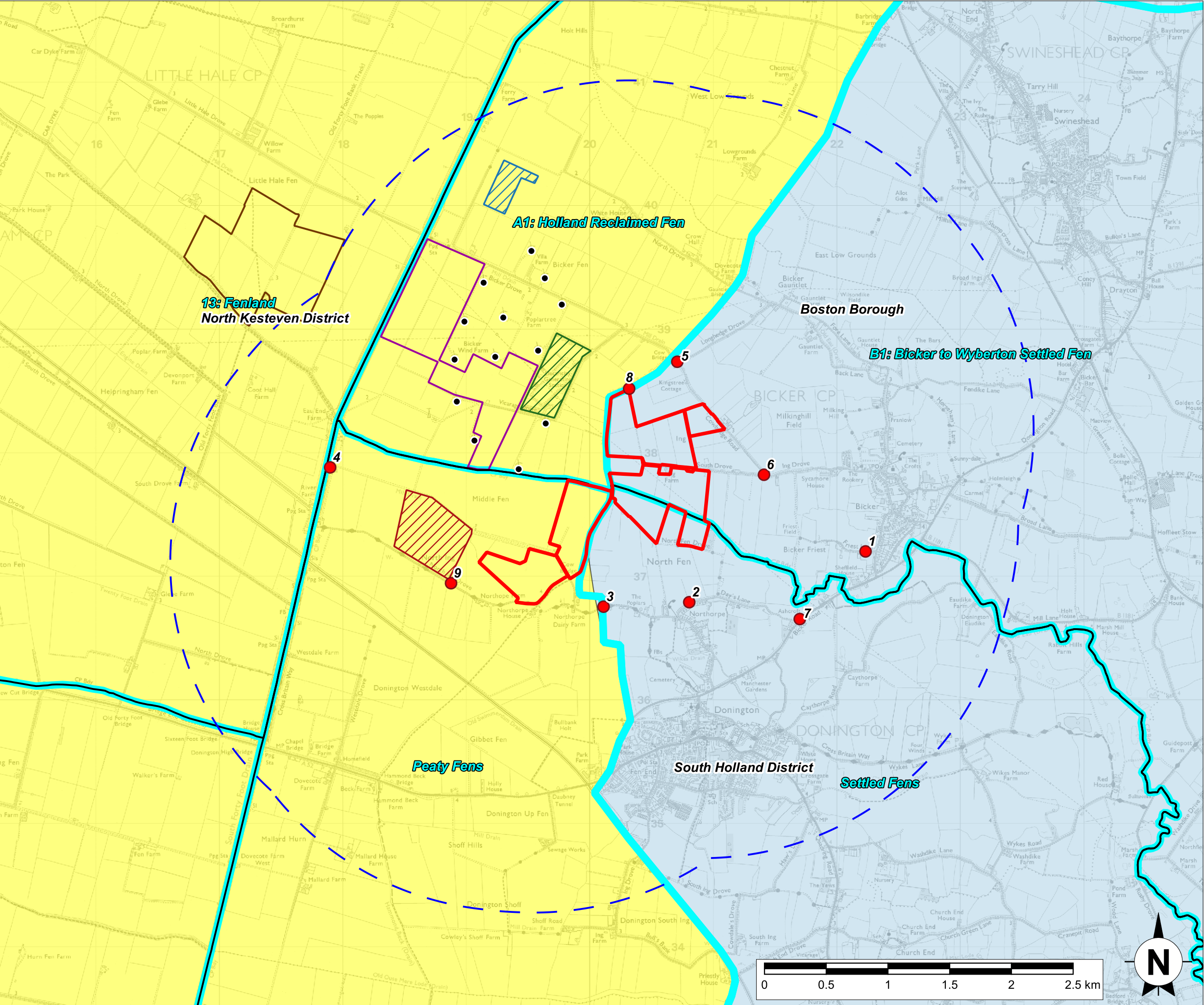
7.0 Residual Effects and Conclusions

- 7.1.1 The landscape and visual effects of the Proposed Development have been assessed in accordance with good practice guidance set out in the third edition of *Guidelines for Landscape and Visual Impact Assessment*. The assessment has been undertaken over a Study Area extending up to 2.5km from the Site, and is supported by visualisation material, including ZTV mapping and photomontages.
- 7.1.2 The Proposed Development would comprise a commercial-scale solar farm, introduced into arable farmland west of Bicker and north-west of Northorpe. Prominent electricity generation and supply infrastructure is already present, including Bicker Wind Farm, two large substations and the Viking Link convertor buildings (which are currently under construction). A further solar farm proposal at Vicarage Drove, adjacent to the Wind Farm has recently been granted planning permission. The landscape is flat and low-lying, and tree and hedgerow cover sometimes provides localised screening of views.
- 7.1.3 The Proposed Development would introduce new solar panels and associated structures into the landscape. These would not be tall structures and hence would not be clearly visible over a wider area. The Proposed Development would however increase the footprint of built development locally and would be clearly visible at close range. New native hedgerows and tree belts would be planted around the boundary of the Site to provide screening of the new structures in the medium and longer term.
- 7.1.4 The Site would be grazed by livestock and/or mown for the life of the Proposed Development. The new planting at the Site boundary and new species-rich

grassland margins created within the Site would enhance biodiversity and would have a beneficial effect upon the landscape fabric of the Site.

- 7.1.5 Effects on landscape character would not be significant. Electricity generation and supply infrastructure is a well-established and visually prominent influence upon the landscape locally. There would be a limited increase in this influence as a result of the introduction of the Proposed Development, but the new solar panels and associated structures would be far less prominent than existing features. New planting would enclose the Site, and once this vegetation becomes established the openness of the fenland landscape would reduce. All change would be localised and limited in scale.
- 7.1.6 Short-term significant visual effects would occur locally, experienced by residents in twelve properties located close to the Site boundary, by users of an approximately 500m stretch of the Cross-Britain Way, and by users of the footpath that runs along the Site boundary. As the proposed new planting at the Site boundary establishes, views of the new structures would be largely screened from view. In the medium and longer-term, visual effects would not be significant
- 7.1.7 In the wider Study Area, the Proposed Development would be a limited addition to the view, appearing less prominent than existing development. As the landscape proposals establish, this limited visibility would reduce further. The presence of the solar panels and associated structures would have little influence upon the wider views available, and effects would not be significant.

FIGURES



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axis

Key

Site Boundary

2.5km distance from Site

Local Authority Boundary

Regional Landscape Character Types

2a: Settled Fens and Marshes

2b: Planned and Drained Fens and Carlands

Borough/ District Landscape Character Areas

Bicker Wind Farm

National Grid Substation

Triton Knoll Substation

Viking Link Converter (under construction)

Vicarage Drove Solar (consented)

Little Hale Fen Solar (proposed)

Viewpoint Locations

VIEWPOINTS

1: Friest Lane, Bicker

2: Day's Lane, Northorpe

3: Northorpe Road/ Cross Britain Way

4: Public brideway Doni/16/2

5: Cowbridge Road

6: Junction of Cowbridge Road with Ing Drove

7: Junction of A52 Bicker Road with Day's Lane

8: Public footpath Bick/2/1

9: North Ing Drove/ Cross Britain Way

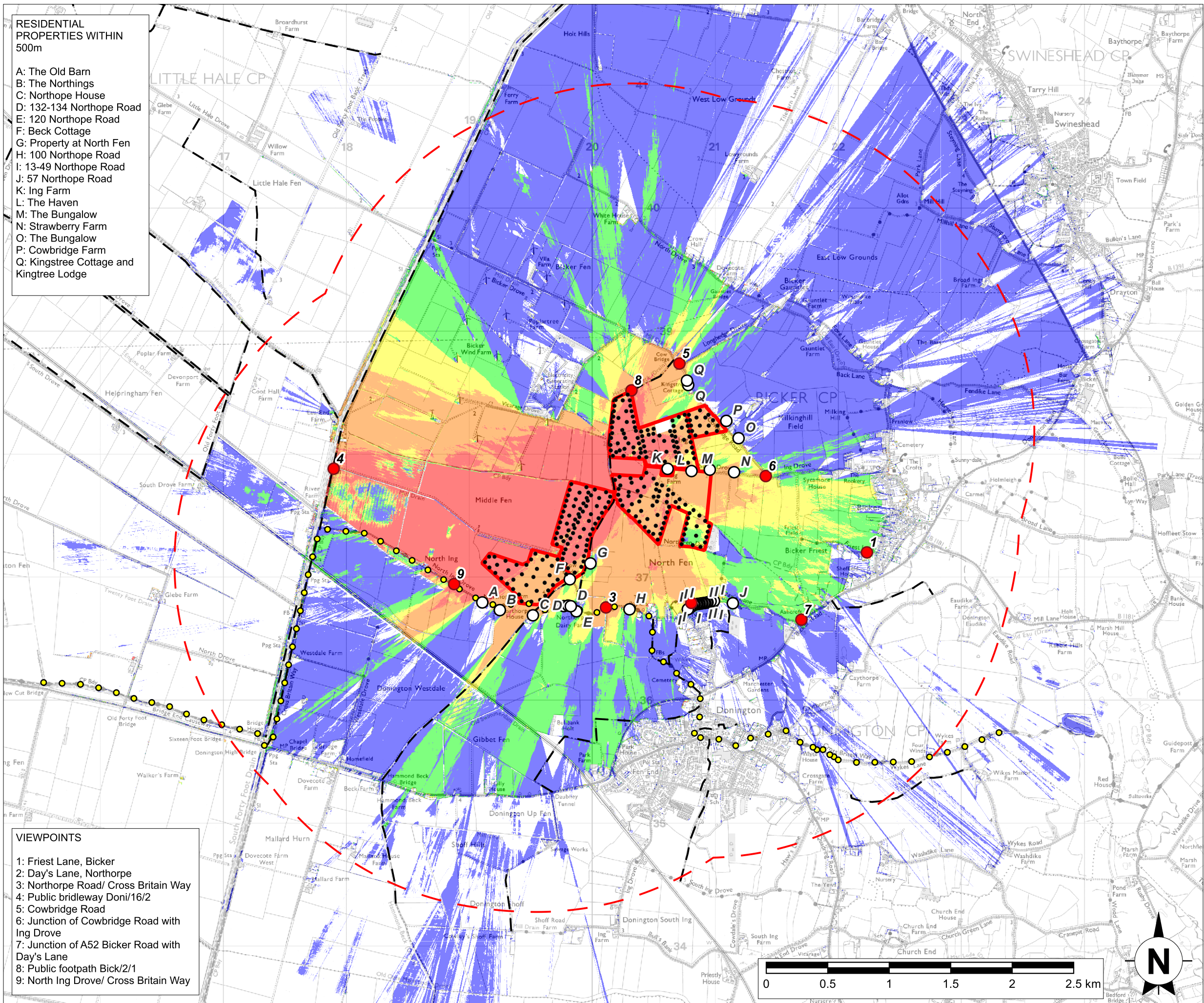
BICKER FEN SOLAR

Figure 1

Landscape and Visual Context

Scale
1:30,000@A3

Date
August 2022



RESIDENTIAL PROPERTIES WITHIN 500m

A: The Old Barn
B: The Northings
C: Northope House
D: 132-134 Northope Road
E: 120 Northope Road
F: Beck Cottage
G: Property at North Fen
H: 100 Northope Road
I: 13-49 Northope Road
J: 57 Northope Road
K: Ing Farm
L: The Haven
M: The Bungalow
N: Strawberry Farm
O: The Bungalow
P: Cowbridge Farm
Q: Kingtree Cottage and Kingtree Lodge

VIEWPOINTS

1: Friest Lane, Bicker
2: Day's Lane, Northorpe
3: Northorpe Road/ Cross Britain Way
4: Public bridleway Doni/16/2
5: Cowbridge Road
6: Junction of Cowbridge Road with Ing Drove
7: Junction of A52 Bicker Road with Day's Lane
8: Public footpath Bick/2/1
9: North Ing Drove/ Cross Britain Way

axis

Key

- Site Boundary
- 2.5km distance from Site Boundary
- Cross Britain Way Long Distance Route
- Public Right of Way
- Residential Properties within 500m of Site
- Location of points used to calculate ZTV

ZTV of 3m high solar panels

- Approx. 1% to 20% of development theoretically visible
- Approx. 20% to 40% of development theoretically visible
- Approx. 40% to 60% of development theoretically visible
- Approx. 60% to 80% of development theoretically visible
- Approx. 80% to 100% of development theoretically visible
- Viewpoint Location

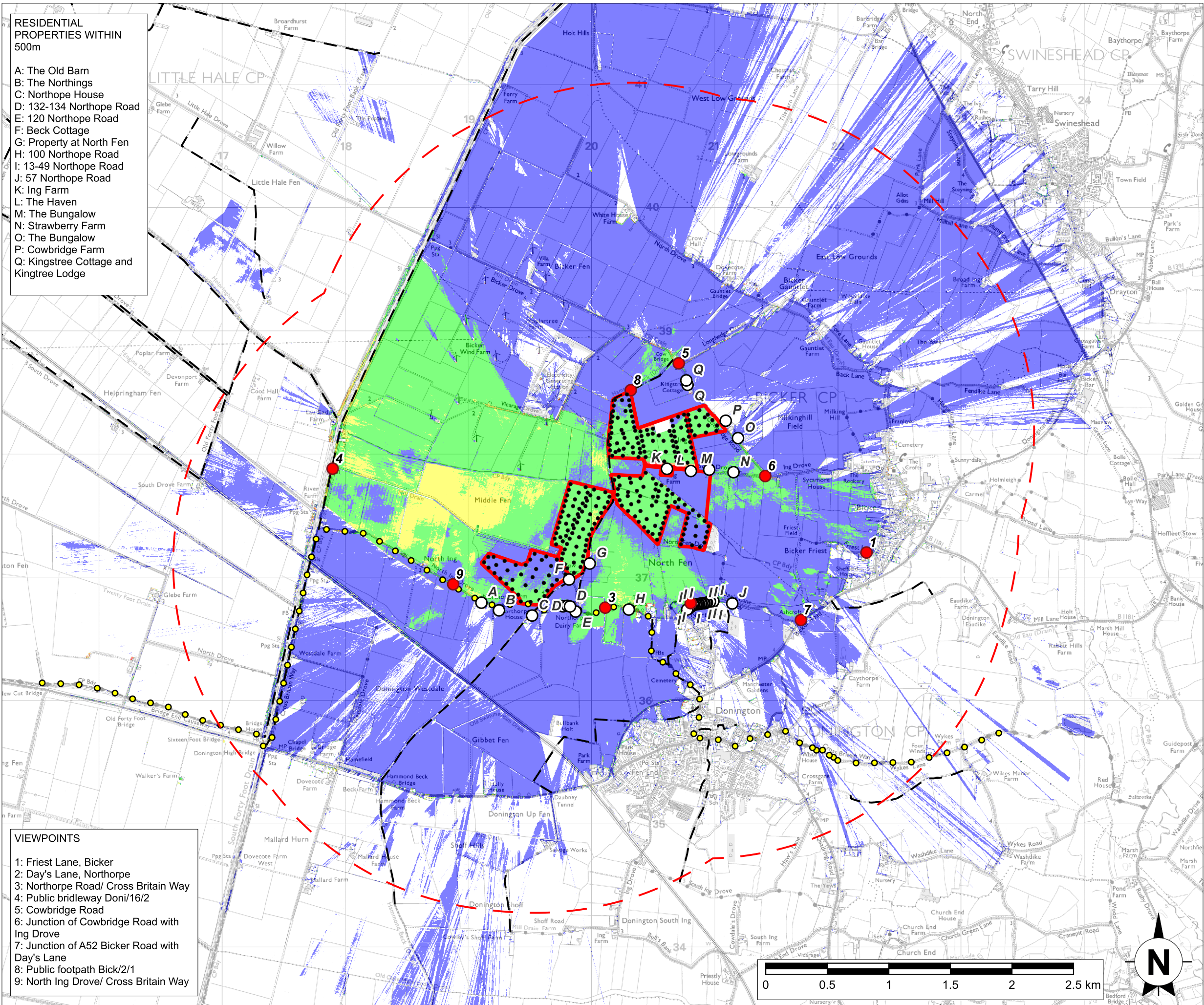
NOTES

1. Zone of Theoretical Visibility (ZTV) has been generated using BlueSky Mapping 2m photogrammetry Digital Surface Model (DSM) data, which reflects the presence of vegetation, buildings and other structures.

2. ZTV generation has allowed for the curvature of the earth, and for light refraction.

3. ZTV has been generated based upon and observer eye height of 1.7m above ground level

BICKER FEN SOLAR	
Figure 2a	
Zone of Theoretical Visibility (Year Zero)	
Scale 1:30,000@A3	Date August 2022







Print on paper at the following size. 841mm width x 420mm height (A1 width x A3 height)
View at a comfortable arm's length

Existing View



Print on paper at the following size. 841mm width x 420mm height (A1 width x A3 height)
View at a comfortable arm's length

Photomontage View:
Year 0