



Mallard Pass

Solar Farm

Mallard Pass Solar Farm

Design and Access Statement

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Key Terms

Access Tracks - The tracks within the Order limits constructed to provide access around the Proposed Development.

Central Container Inverters - Inverters, switchgear and transformers are located throughout the Solar PV Site and would be housed together in containers.

Design Guidance - Project specific design responses to deliver good design informed by Project Principles (see Section 4).

Enhancement and Mitigation Areas - The area within the Order limits that is being proposed for mitigation and enhancement.

Green Infrastructure - A network of multi-functional green space and other green features, urban and rural, which can deliver quality of life and environmental benefits for communities.

Highways Works Site - The areas that are being proposed for improvement works to facilitate access to the Solar PV Site.

Outline Landscape and Ecology Management Plan (oLEMP) - a document setting a framework for management during operation of the Proposed Development.

Onsite Substation - The Onsite Substation comprising electrical infrastructure such as the transformers, switchgear and metering equipment required to facilitate the export of electricity from the Proposed Development to the National Grid.

Order limits - The land required temporarily and/or permanently for the construction, operation and maintenance of the Proposed Development.

Permissive Paths - New recreational informal paths signed as permissive that the landowner allows the public to use for the life of the Proposed Development.

Project Principles - Overarching principles identified at the start of the project to deliver good design (see Section 4).

Proposed Development - A Nationally Significant Infrastructure Project (NSIP) for the installation of solar photovoltaic (PV) Arrays and associated infrastructure which would allow for the generation and export of electricity.

PV Array - A PV Array is a distinct grouping of PV Tables. The PV Arrays are arranged within the Solar PV Site.

Solar PV Site - The area within the Order limits that is being proposed for PV Arrays, Solar Stations and the Onsite Substation.

Solar Station - a station comprising centralised inverters, transformers and switch gear with each component grouped together to form each solar station.

Works Plans - The plans submitted with the Application known as the Works Plans and which delineate the Order limits for the Proposed Development.



Executive Summary

Mallard Pass Solar Farm (the Proposed Development) is proposed to help meet the urgent need for home grown, secure, renewable energy that is required by Government policy in addressing climate change and energy security.

The Proposed Development also offers the opportunity to deliver wide-ranging benefits beyond renewable energy production including recovery of natural environments, economic growth and social benefits, including education and health and wellbeing opportunities.

Solar at scale has an important role to play in the renewable energy mix. However, experience has shown that host local communities have understandable concerns about the location, design and operation of projects of this kind. Mallard Pass Solar Farm is sensitive to such concerns and this has been key to the approach the project has taken.

This Design and Access Statement (DAS) details the design process for the Proposed Development, both in terms of good design outcomes but also good design as a process. Achieving good design outcomes through good design process has been at the core of the Proposed Development. Good design has been founded on the Vision for the Proposed Development set out at the very start of the project. The design has grown and been refined as a result of technical analysis and assessment, design evolution and importantly stakeholder feedback. Throughout the design process the team has sought to respond sensitively and transparently to matters raised and the delivery of a sensitive, well-designed proposal that delivers benefits beyond clean, renewable energy.

The DAS sets out how good design aspirations and intentions made strategically within the Vision have cascaded through the project and how these tangibly manifest themselves as good design outcomes.



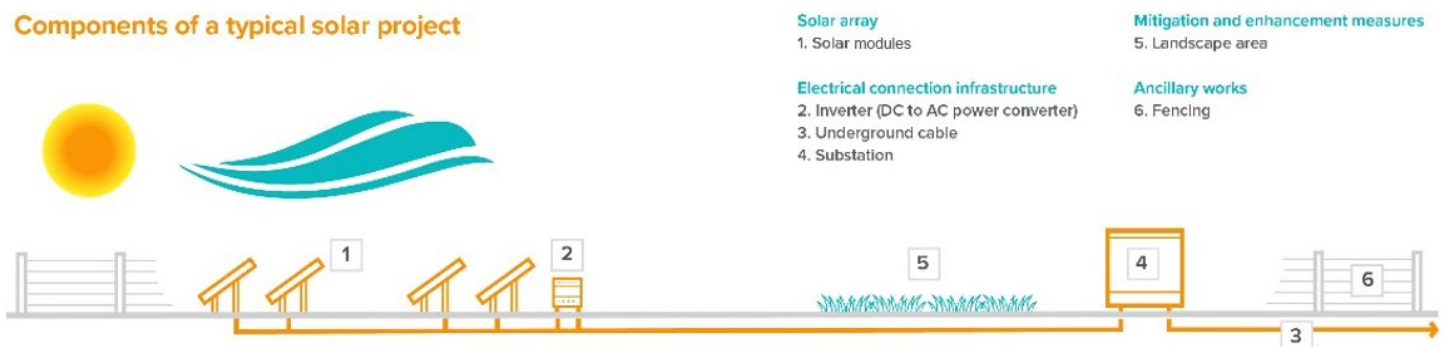


Solar arrays.

1.0 Introduction

- 1.1 This Design and Access Statement (DAS) supports an application for a Development Consent Order (DCO) for the construction, operation and maintenance of a ground mounted solar park with an intended design capacity of over 50MW with associated development ("the Proposed Development").
- 1.2 The Proposed Development is located near to Essendine, on approximately 852 hectares (ha) of land within Rutland County Council, (RCC) South Kesteven District Council (SKDC) and Lincolnshire County Council (LCC) and is known as Mallard Pass Solar Farm (MPSF). The Application is being submitted by on behalf of Mallard Pass Solar Farm Ltd ("the Applicant").
- 1.3 The Application for a DCO must be submitted to and determined by the Secretary of State for Business, Energy and Industry Strategy (BEIS) because the Development is classified as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008, with a total capacity exceeding 50MW.
- 1.4 The Proposed Development comprises photovoltaic (PV) Solar Arrays, Onsite Substation, Transformers, Inverters, access tracks and mitigation and enhancement areas that would remain undeveloped. It would provide a clean, low carbon, renewable and sustainable form of electricity in the context of an urgent national need for this, and will also make a valuable contribution to the generation of electricity at a local level.

Components of a typical solar project





Typical components of a solar farm.

- 1.5 The Proposed Development would contribute significantly to South Kesteven's and Rutland's progress in meeting their renewable energy objectives and would also assist in meeting national targets for both energy supply and low carbon energy development.
- 1.6 This DAS should be read in conjunction with the accompanying **Planning Statement [EN010127/APP/7.2]** which sets out the planning policy context relating to the design and access issues of the Proposed Development.
- 1.7 The Proposed Development comprises the installation of PV Arrays, Onsite substation, grid connection corridor and Mitigation and Enhancement Areas. The principal components comprise the following:
- PV Modules;
 - Mounting Structures;
 - Inverters;
 - Transformers;
 - Switchgear;
 - Onsite Substation and Ancillary Buildings;
 - Low Voltage Distribution Cables;
 - Grid Connection Cables;
 - Fencing, security and ancillary infrastructure;
 - Access tracks; and
 - Green infrastructure (GI).
- 1.8 To maintain flexibility in the design a number of parameters such as maximum heights and extents have been set for the Proposed Development (set out in **Appendix 5.1** of the Environmental Statement **[EN010127/APP/6.2.]** that accord with the Project Design Guidance set out in this document.
- 1.9 Several other documents have also been produced to ensure both construction and maintenance of the Proposed Development is to high standards, including:
- an Outline Construction Environmental Management Plan **[EN010127/APP/7.6];**
 - an Outline Construction Traffic Management Plan **[EN010127/APP/7.11];**
 - an Outline Soils Management Plan **[EN010127/APP/7.12];**
 - an Outline Operational Environmental Management Plan **[EN010127/APP/7.7];**
 - an Outline Landscape and Ecology Management Plan **[EN010127/APP/7.9];** and
 - an Outline Decommissioning Environmental Management Plan **[EN010127/APP/7.8].**



2.0 Good Design

- 2.1 Good design matters and has a direct effect on the quality of people's lives. It is as much about processes and behaviours as it is about design outcomes.
- 2.2 The Overarching National Policy Statement (NPS) for Energy (EN-1) (2011) ([Ref. 1](#)) sets out the Government's policy for the delivery of major energy infrastructure. This is to help deliver the Government's climate change objectives by clearly setting out the need for new low carbon energy infrastructure to contribute to climate change mitigation.
- 2.3 EN-1 sets out criteria for good design for energy infrastructure. Paragraph 4.5.1 states that "Applying "good design" to energy projects should produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible."
- 2.4 Paragraph 4.5.3 states that whilst applicants may have very limited choice in the physical appearance of some energy infrastructure, given the importance the Planning Act 2008 ([Ref. 2](#)) places on good design and sustainability, the Secretary of State need to be satisfied that energy infrastructure development are as attractive, durable and adaptable as they can be.
- 2.5 In September 2021, the Government published revised energy National Policy Statements that support decisions on major energy infrastructure for consultation. The draft revised EN-1 ([Ref. 3](#)) scoped in solar development as an urgently needed generating technology to meet the Government's energy objectives. Paragraph 4.6.2 of the draft revised EN-1 states that design principles should be established from the outset of the project to guide the development from conception to operation. Footnote 61 of the draft revised EN-1 states that "Design principles should take into account any national guidance on infrastructure design, this could include for example the Design Principles for National Infrastructure published by the National Infrastructure Commission".
- 2.6 NPS EN-3 ([Ref. 4](#)) also sets expectations on 'good design'. Section 2.5 states:
- 2.7 *"Proposals for renewable energy infrastructure should demonstrate good design in respect of landscape and visual amenity, and in the design of the Project to mitigate impacts such as noise and effects on ecology."*
- 2.8 *The IPC [Secretary of State] should be satisfied that the design of the proposed generating station is of appropriate quality and minimises adverse effects on the landscape character and quality."*
- 2.9 *Good design that contributes positively to the character and quality of the area will go some way to mitigate adverse landscape/visual effects. Development proposals should consider the design of the generating station, including the materials to be used in the context of the local landscape."*
- 2.10 *Mitigation is achieved primarily through aesthetic aspects of site layout and building design including size and external finish and colour of the generating station to minimise intrusive*

appearance in the landscape as far as engineering requirements permit. The precise architectural treatment will need to be site-specific.”

2.11 The draft revised NPS EN-3 ([Ref. 5](#)) was also published for consultation in September 2021, scoping in and providing technology specific policy guidance on solar developments. Draft revised EN3 reaffirms the need for good design at paragraph 2.4.2 noting *“Proposals for renewable energy infrastructure should demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology”*.

2.12 Supporting consideration of good design for infrastructure projects, and as referred to in the draft revised EN-1([Ref. 3](#)), the National Infrastructure Commission’s (NIC) ‘Design Principles for National Infrastructure’ ([Ref. 6](#))

identifies the purposes of the design process is to bring together engineering, environmental and creative expertise to shape and deliver a development project. The document notes that *“design is as much about process as it is product. Imaginative thinking about design should be embedded at every step of planning and delivery. The principles ensure a good process leads to a good design outcomes.”* The document sets out four thematic principles to shape the design of nationally significant infrastructure projects. These are:

- **Climate** - Mitigate greenhouse gas emissions and adapt to climate change.
- **People** - Reflect what society wants and share benefits widely.
- **Places** - Provide a sense of identity and improve our environment.



Grazing can take place under and between solar

- **Value** - Achieve multiple benefits and solve problems well.

- 2.13 Good design has been a fundamental consideration from the outset of the project. This DAS demonstrates how good design has been embedded in the Proposed Development vision and principles, how these have influenced the overall siting and aesthetics of the Proposed Development, how this has been considered and how good design will be taken forward at the detailed design stage.
- 2.14 The DAS also explains how design evolution for the Proposed Development has been an iterative process and the proposed design has evolved as constraints and opportunities have emerged over time, throughout the various stages of assessment work and consultation.





The Drift - a key structuring element adjacent to and within the Order

3.0 The Order limits and Context

3.1 This section of the DAS summarises the Order limits and context of the Proposed Development. Reference should be made to the Environmental Statement (ES) for further technical details.

3.2 Order limits and surroundings

3.3 The Order limits equates to approximately 852ha, with approximately 524ha of the Order limits lying within Rutland and the remaining 327ha of the Order limits lying within South Kesteven's administrative boundary.

3.4 The Order limits are centred approximately at OS grid reference TF00411. The Grantham - Peterborough (East Coast Main Line) railway line dissects the Order limits on a general north-west to south-east alignment. The topography within the Order limits range between 16m - 67m AOD the lowest elevation running along the route of the East Coast Mainline railway. The highest elevation is present in the north-western extent of the Order limits.

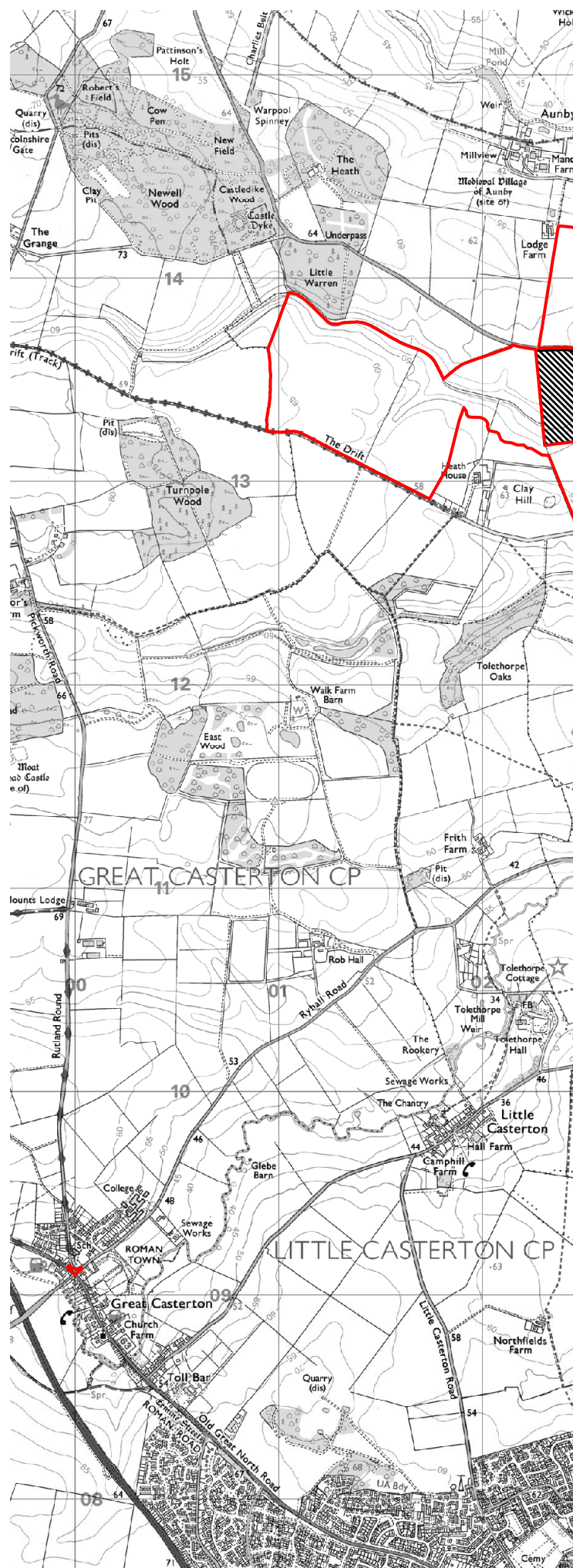
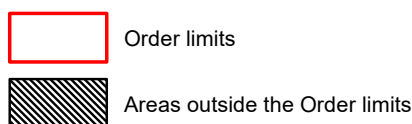
3.5 The Order limits are located to the immediate south, east and west of Essendine and approximately 700m north-east of Ryhall. The north-eastern most edge of Stamford is located approximately 1.4km south-west of the Order limits at its nearest point. The centre of Peterborough is located approximately 16km south-east of the Order limits.

3.6 The Order limits comprise of four different areas, which are broadly defined as follows.

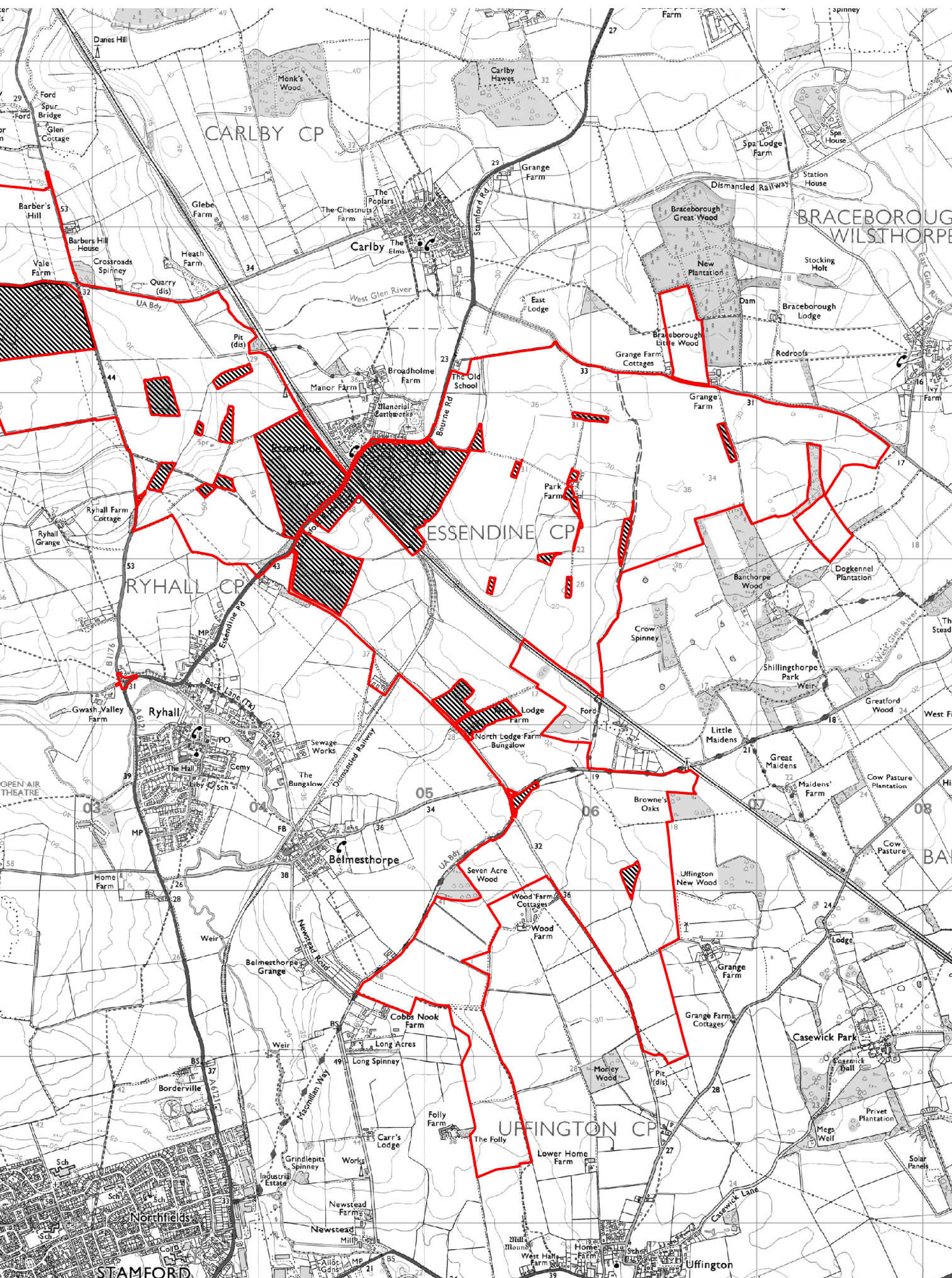
- **The Solar PV Site** - areas within the Order limits that are proposed for solar development, the Onsite Substation and associated ancillary infrastructure, including temporary construction compounds and security fencing;
- **Mitigation and Enhancement Areas** - areas within the Order limits that are proposed for landscape screening, habitat creation and provision of permissive paths;
- **Highway Works Site** - areas beyond the Solar PV Site which have been proposed for cable route connections and temporary/permanent improvements to existing highways to facilitate the construction, operation and maintenance, and decommissioning of the Proposed Development; and
- **Grid Connection Corridor** - area within the Order limits that are proposed for the Grid Connection Cable between the Onsite Substation and the National Grid Ryhall Substation and the new connection at National Grid Ryhall Substation.

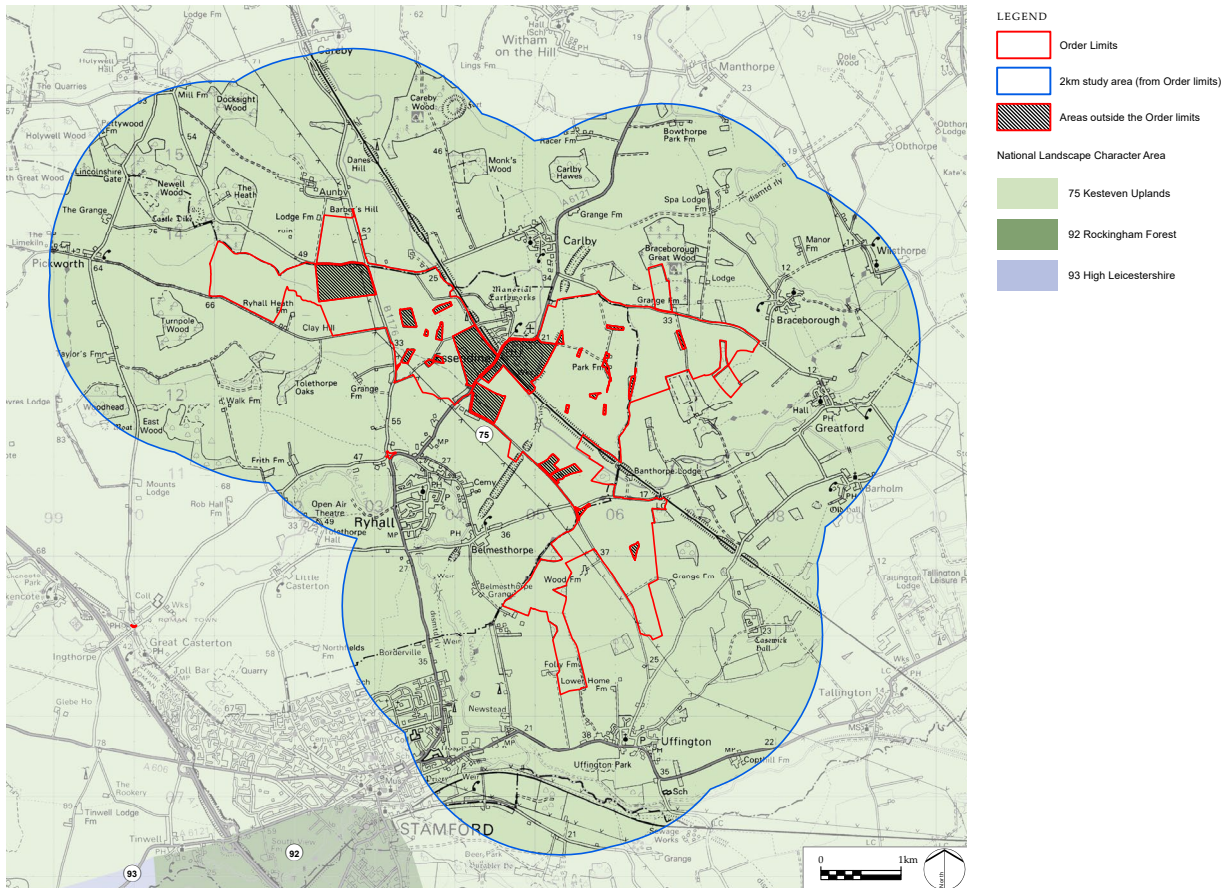
3.7 The combined total area of these four different areas exceeds the total area of the Order limits as the areas overlap in certain locations within the Order limits. For example the Grid Connection Corridor overlaps with the Solar PV Site as shown on the **Works Plans [EN010127/APP/2.2]**.

3.8 The following section provides a summary of the existing environmental context of the Order limits. All of these technical studies and feedback from stakeholders and consultees have informed the design evolution of the Proposed Development as summarised in Section 4 and further detail on each is provided within the ES.

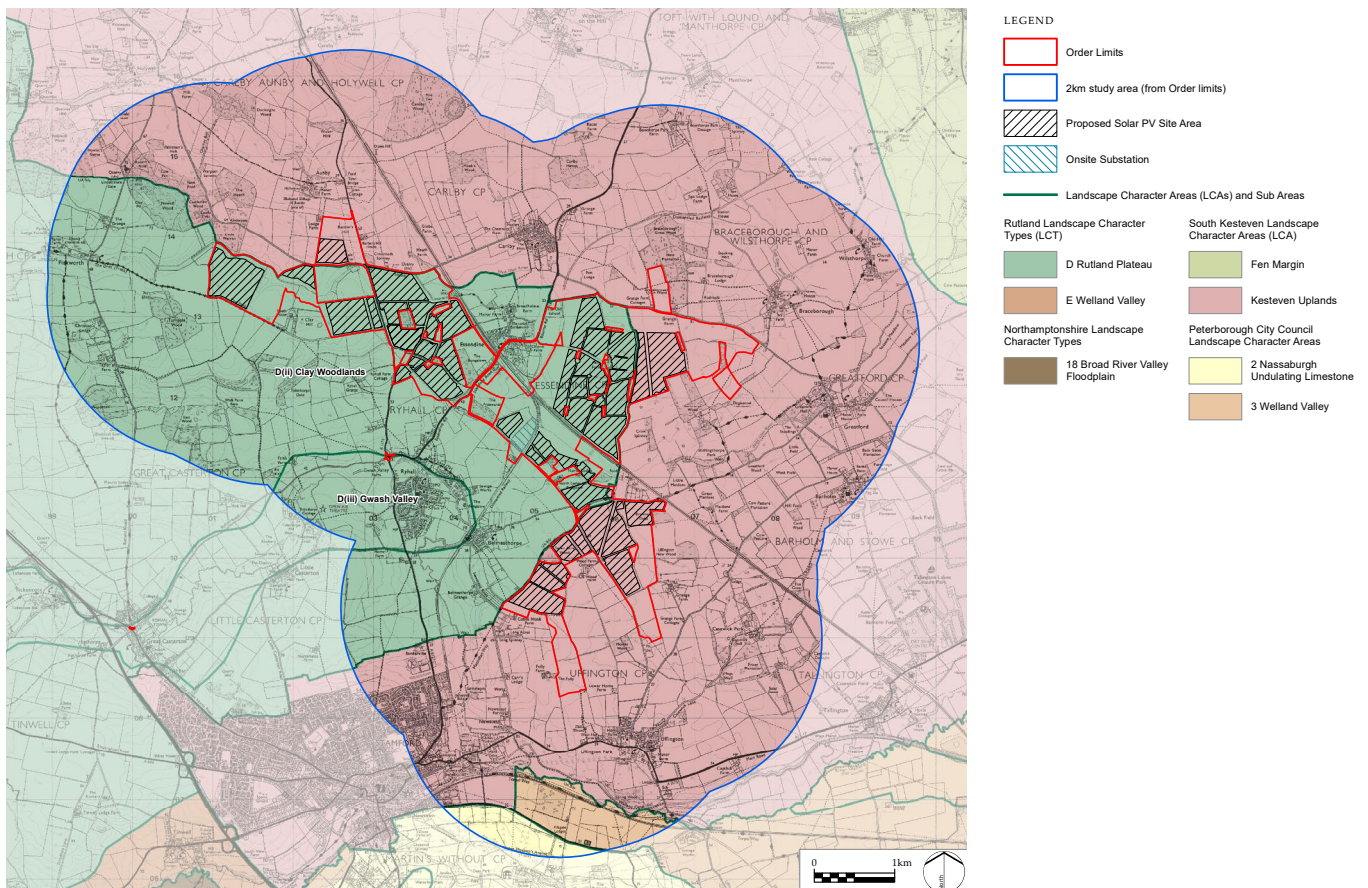


Order limits.





National Landscape Character Areas. (Figure 6.3 of the ES)



Local Landscape Character Areas (figure 6.4 of the ES).

3.9 Landscape Character, Visual Amenity and Green Infrastructure

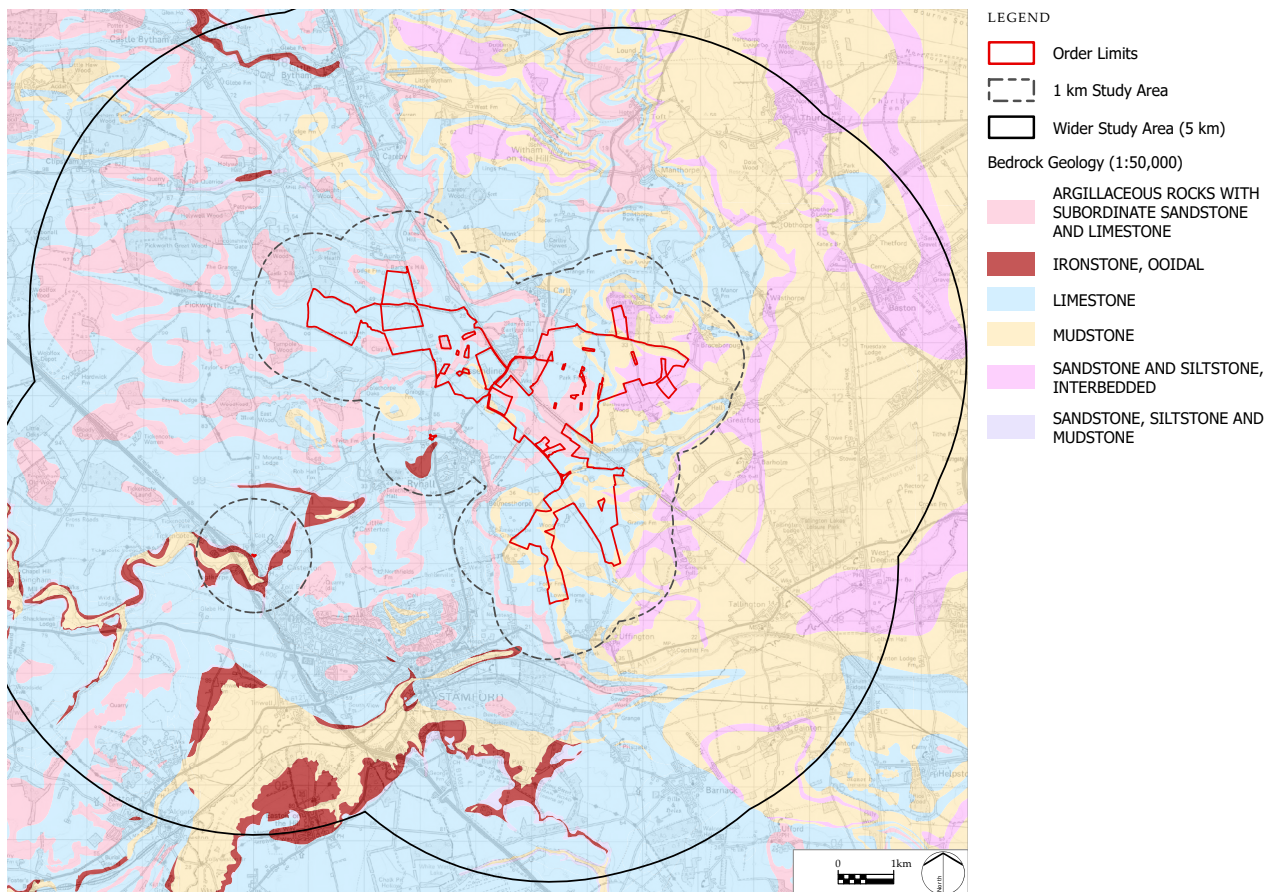
- 3.10 The Order limits occupies an area of undulating arable farmland between the villages of Carby, Essendine, Braceborough, Greatford, Uffington, Belmesthorpe and Ryhall.
- 3.11 The Order limits lie within the Rutland Plateaux D(ii) Clay Woodlands Landscape Character Area broadly covering the area around Essendine.
- 3.12 Key characteristics of this landscape area as identified within the Rutland Landscape Character Assessment ([Ref. 7](#)) include:
- *“medium to large scale mixed broadleaved and coniferous woodlands within large farming estates ... These woodlands... are conspicuous features in most views within or into this area. Close to, they enclose views whilst providing an extensive backdrop in most distant views across well maintained farmland.”*
 - *“Woodlands are less extensive around the Gwash Valley, where trees are in small copses and where close trimmed hedges alongside large arable fields give a more open feeling to the landscape. This is particularly so in the extreme eastern corner of the County, between Ryhall and Essendine, where the railway line and its tall gantries, high voltage power cables and pylons, and modern housing are intrusive.”*
 - *“a transitional area between the settled estate woodlands to the north and west, and the more open, modern unsettled claylands to the east and south.”*
 - *“Numerous outlying farms lie within the central area ... on or close to quiet roads and tracks...”*

3.13 The guidelines on management measures for this LCA include:

- *“to enhance the large-scale, gently undulating, agricultural landscapes with substantial woodlands and avenues;*
- *“to enhance the sustainable management of existing woodlands and to create new woodlands in the less wooded parts around the Gwash Valley, especially where they would create skyline features*
- *“to improve the edges of the settlements and integrate large structures and modern buildings into the landscape where necessary; and*
- *“to protect historic features such as earthworks and restore characteristic drystone walls.”*

3.14 The Order limits are also within the Kesteven Uplands LCA as identified within the South Kesteven Landscape Character Assessment ([Ref. 8](#)), broadly covering Essendine village and the eastern and western areas. Key characteristics of the Kesteven Uplands are identified to be:

- *“A relatively unified, simple, medium-scale agricultural landscape, with a high proportion of historic woodland.*
- *Undulating landform based around the valleys of the Rivers Witham and East and West Glen and the Welland to the south.*
- *Picturesque villages built of local limestone, with collyweston slate roofs to the south, and pantiles to the north.*
- *High concentration of houses and parks, with areas of farmland under estate management.*
- *A dispersed, nucleated settlement pattern, mostly following the river valleys.*
- *Enclosed mostly by hedgerows, with hedgerow trees.*



Solid Geology (Figure 11.2 of the ES).

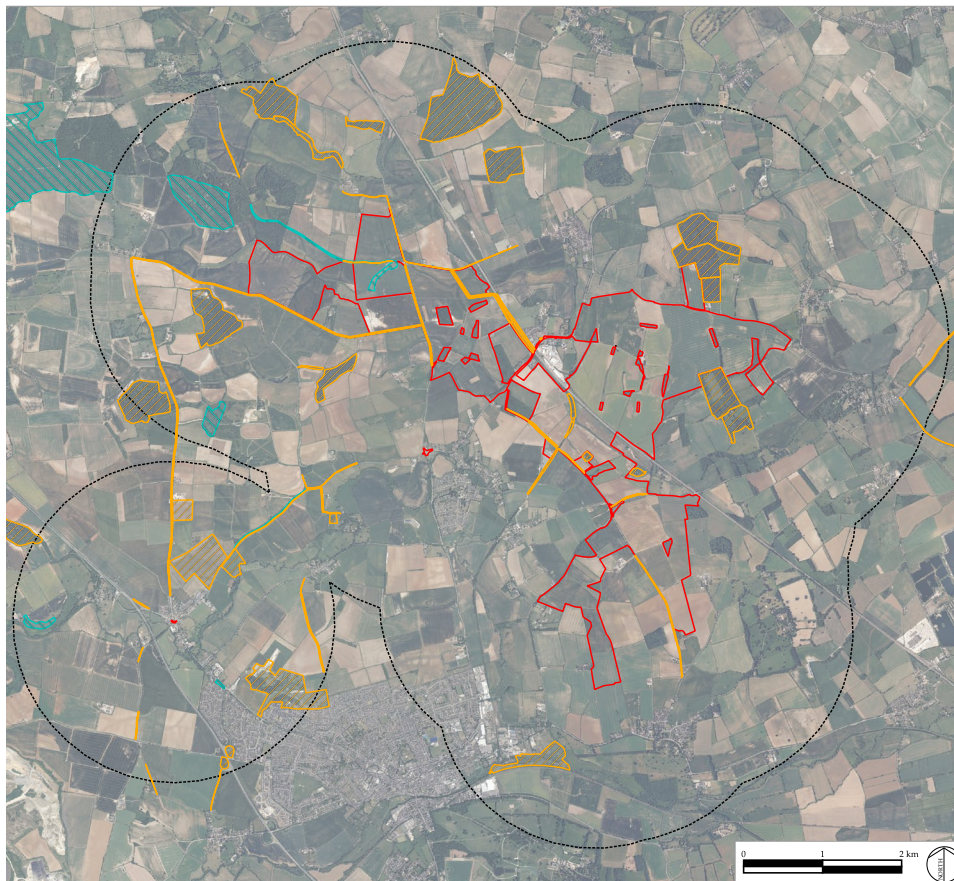


The Macmillan Way Long Distance Trail runs through part of the Order limits.

- *Modern human influences include airfields and the A1, Great North Road.”*
- 3.15 The guidelines for this LCA on management measures include:
- *“Protect and improve field boundary condition.*
 - *Protect existing hedgerow trees.*
 - *Plant new hedgerow trees.*
 - *Maintain important grassland areas.*
 - *Protect important and distinctive woodland cover.*
 - *Protect historic parkland.*
 - *Protect field trees, particularly in parkland and in large arable fields.*
 - *Maintain traditional village forms.*
 - *Use of new planting to minimise the visual impact of major roads and industrial buildings.*
 - *Pay special attention to sensitive spaces around the edge of historic towns such as Stamford and the villages.*
 - *Maintain open areas that extend into the towns and villages.”*


3.16 Landscape and visual field and desktop studies have been undertaken as part of the design process, informing the design and identifying landscape mitigation and enhancement opportunities as summarised in Section 4. This has included site visits, on site visual and landscape character analysis, Zone of theoretical Visibility (ZTV) studies and review of guidance and policy documentation including landscape character studies and green infrastructure strategies. Further details of these technical studies can be found in the ES.

3.17 An appreciation of the surrounding landscape character has informed the design of the Proposed Development as detailed in Section 5.



LEGEND


Nationally designated sites within 2 km

 Site of Special Scientific Interest (SSSI)

 Local Wildlife Site (LWS)

Order limits

 Order limits

 2 km from order limits

Designated ecology sites (Figure 7.1 of the ES).



Many of the roadside verges locally have botanical interest.

3.18 Ecology and Biodiversity

- 3.19 Desk study and field surveys have been undertaken in addition to analysis of existing records and information on designated sites and protected or otherwise notable species within the local area. These are reported on in **Chapter 7: Ecology and Biodiversity** in the ES.
- 3.20 Four international designated sites are present within 10km of the Order limits, the Rutland Water Special Protection Area (SPA) and Ramsar Site, which are located approximately 8.6km to the south-west, Baston Fen SAC is located 4.46 km north east, Grimethorpe SAC is located 4.67 km to the north; and Barnack Hills and Holes SAC is located 6.8 km south of the Order limits.
- 3.21 A total of eight national statutory designated sites are present within 2 km of the Order limits. All these are Sites of Special Scientific Interest (SSSIs) and distant from the Order limits.
- 3.22 Ryhall Pasture and Little Warren Verges SSSI, however, is directly adjacent to the north-west of Order limits. This SSSI includes an area of one of the semi-natural unimproved limestone grassland and features a characteristic calcareous plant community. This SSSI site also includes a stretch of species-rich roadside verges to the east of Pickworth.
- 3.23 A total of 57 non-statutory sites designated as Local Wildlife Sites (LWS) are present within 2 km of the Order limits. The majority of these are designated for habitats (predominantly hedgerows, grassland and woodland) with many also featuring locally or nationally scarce species. Of these LWSs, 16 are located within the Order limits.
- 3.24 All the boundary and internal hedgerows within the Order limits qualify as Habitats of Principal Importance (HPI). The West Glen River is also a HPI.

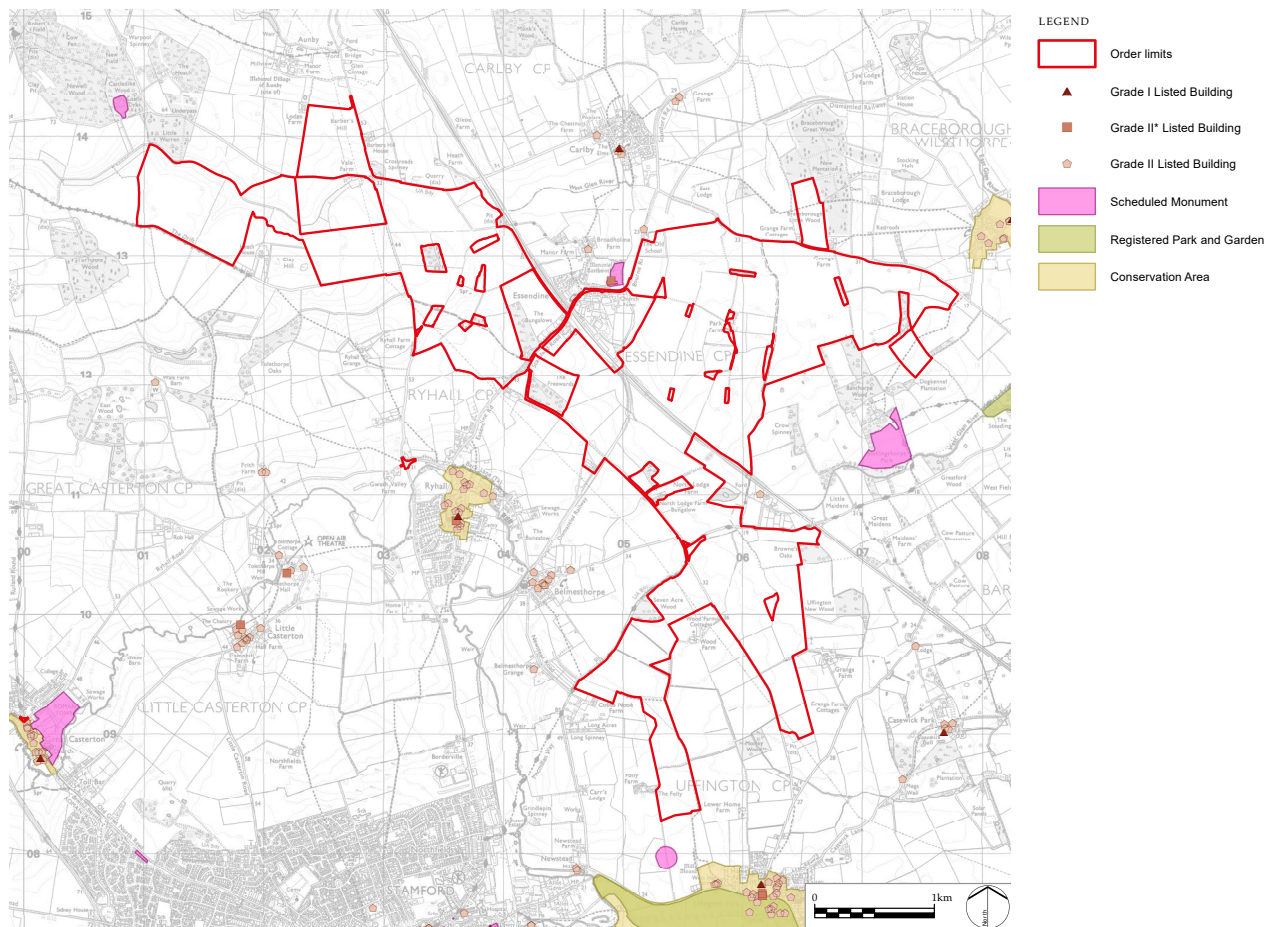
3.25 The main habitats within the Order limits comprise:

- Broadleaved semi-natural woodland
- Hedgerows
- Ponds
- Flowing water
- Arable farmland
- Improved grassland
- Poor semi-improved grassland
- Semi-improved neutral grassland
- Dense scrub
- Tall ruderal vegetation
- Ditches
- Scattered trees
- Bare ground
- Buildings
- Hardstanding

3.26 Field survey has also confirmed the Order limits supports or has the potential to support a number of protected species including badgers, bats, reptiles, otter, water vole and a number of protected bird species, including barn owl, red kite and kingfisher.

3.27 The majority of the Order limits currently comprises intensively managed, species-poor habitats of low or very low value for plant diversity, and is unlikely to support any notable populations or assemblages of plants. The more mature woodland areas and aquatic habitats may support some notable species.

3.28 An understanding of ecology and the ecological context has informed the design of the Proposed Development as set out in Section 5.



Designated heritage assets (Figure 8.1 of the ES).



Footbridge over the West Glen River outside of the Order limits.

3.29 Cultural Heritage

3.30 A desk based assessment and geophysical survey has been undertaken to understand cultural heritage assets within the locality. Trial trenching has also been undertaken across the Solar PV Site. The results of this work have been reported upon in **Chapter 8: Cultural Heritage** of the ES.

3.31 The land within the Order Limits retains an agricultural character, consistent with its use since at least the post-medieval period and likely earlier. The existing field pattern reflects considerable boundary loss following the amalgamation of enclosures in the late-20th century.

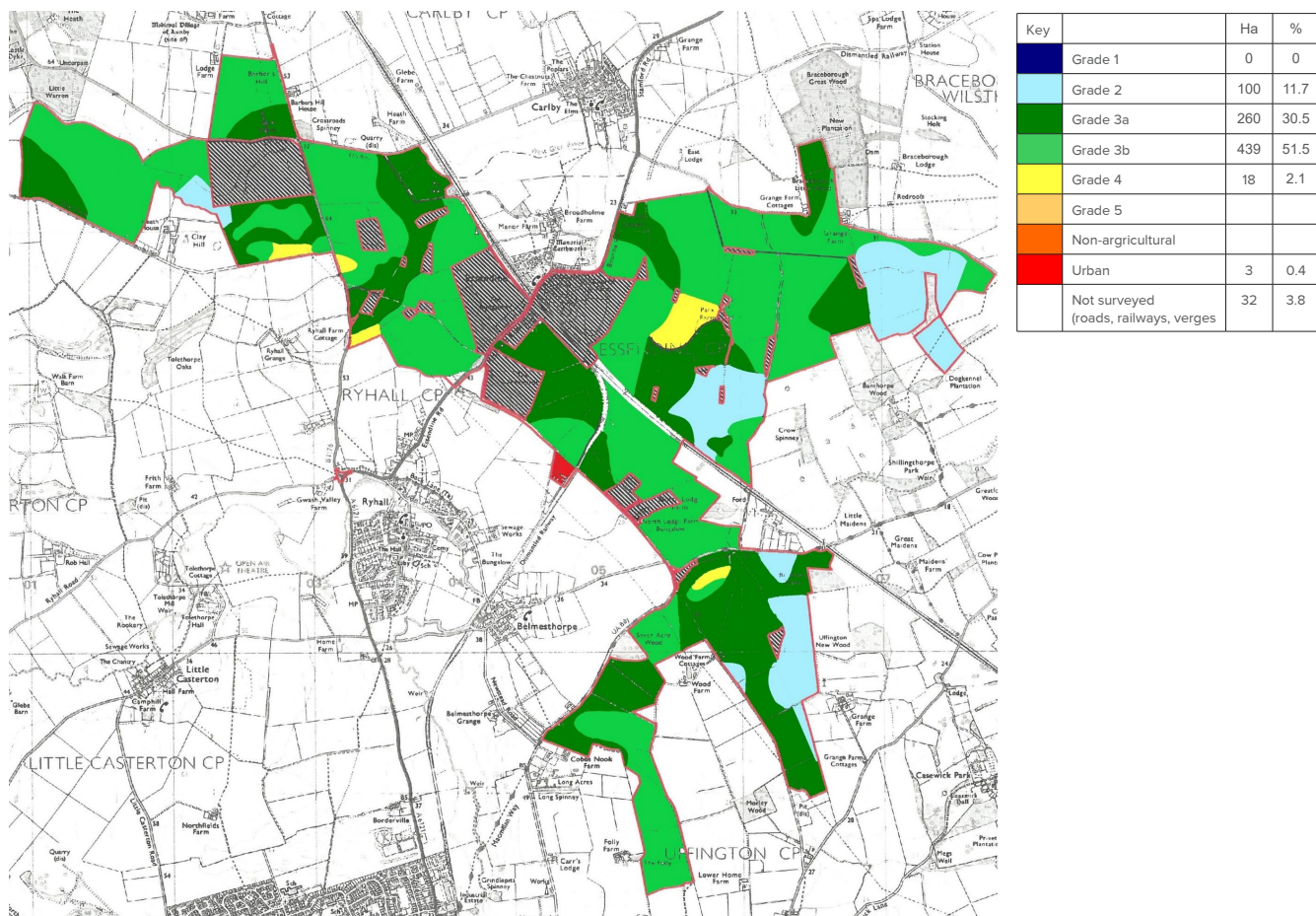
3.32 No designated heritage assets comprising Listed Buildings, Conservation Areas, Scheduled Monuments or Registered Parks are located within the Order Limits.

3.33 A total of approximately 112 designated heritage assets are located within 1km of the Order limits. Assessment presented within **Chapter 8: Cultural Heritage** of the ES identifies that only two of these would potentially be affected by the Proposed Development, as resulting from change to their settings. These comprise:

- The Scheduled Monument of Essendine Castle;
- the Grade II* Listed Church of St. Mary; and
- the Grade II Listed Banthorpe Lodge.

3.34 In addition, the non-designated heritage asset Braceborough Grange is located approximately 10m north of the Order limits.

3.35 An appreciation of the heritage context has informed the design of the Proposed Development as detailed in Section 5.



Agricultural Land Classification (ALC) (Figure 12.1 of the ES).

3.36 Agricultural Land

3.37 An Agricultural land Classification (ALC) survey has been undertaken for the Order limits. Under Natural England guidance (**Ref. 9**), Best and Most Versatile Land (BMV), i.e. land that of is excellent to good quality agricultural, comprises Grades 1, 2 and 3a. The survey has found that Grades 2 (100ha), Grade 3a (260ha), Grade 3b (439ha) and Grade 4 (18ha) is present within the Order limits.

3.38 No Grade 1 was recorded. Grades 1 to 3a are considered to be the Best and Most Versatile (BMV) which is land that is the most flexible, productive and efficient in response to inputs.

3.39 Each of the landowners have been consulted as part of the pre-application process to understand how the land performs and responds to inputs and how each of the fields within the Order limits is farmed. It is of note that not all areas of the Order limits would be PV Arrays and 239ha of agricultural farmland within the Order limits would continue to be managed under an agricultural regime.

3.40 The survey also found the soils within the Order limits are predominantly developed over limestone and are quite variable spatially with five principal groups identified:

- Elmton 1 soils are mainly permeable and well-drained;
- Elmton 3 soils are usually shallow loamy and clayey soils over limestone, and usually well-drained;
- Denchworth soils are mainly stoneless, wet, clayey soils with areas usually waterlogged for long periods in winter;
- Fladbury 1 Association soils are deep, clayey alluvial soils and slowly permeable, and can be waterlogged in winter depending upon elevation; and

- Sherborne Association soils are usually permeable and well drained.

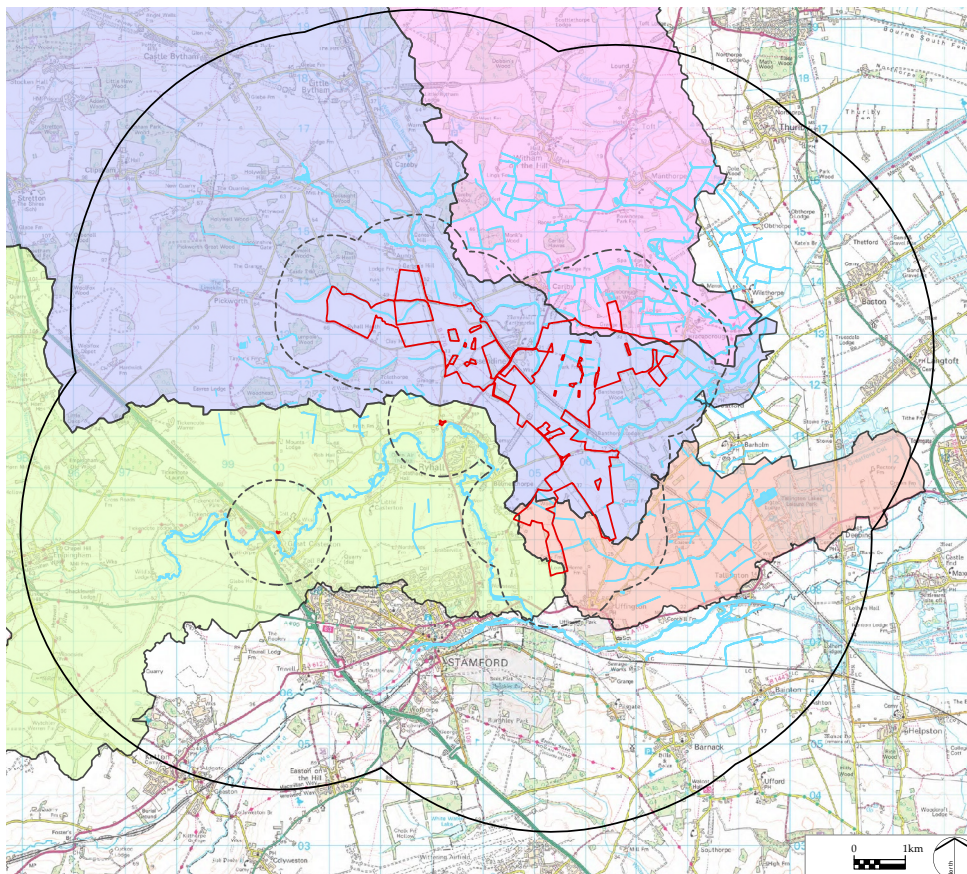
3.41 Further details on soils and land use are presented in **Chapter 12: Land Use** and Soils of the ES.

3.42 In terms of agricultural businesses, there are four principal farming enterprises affected by the Proposed Development:

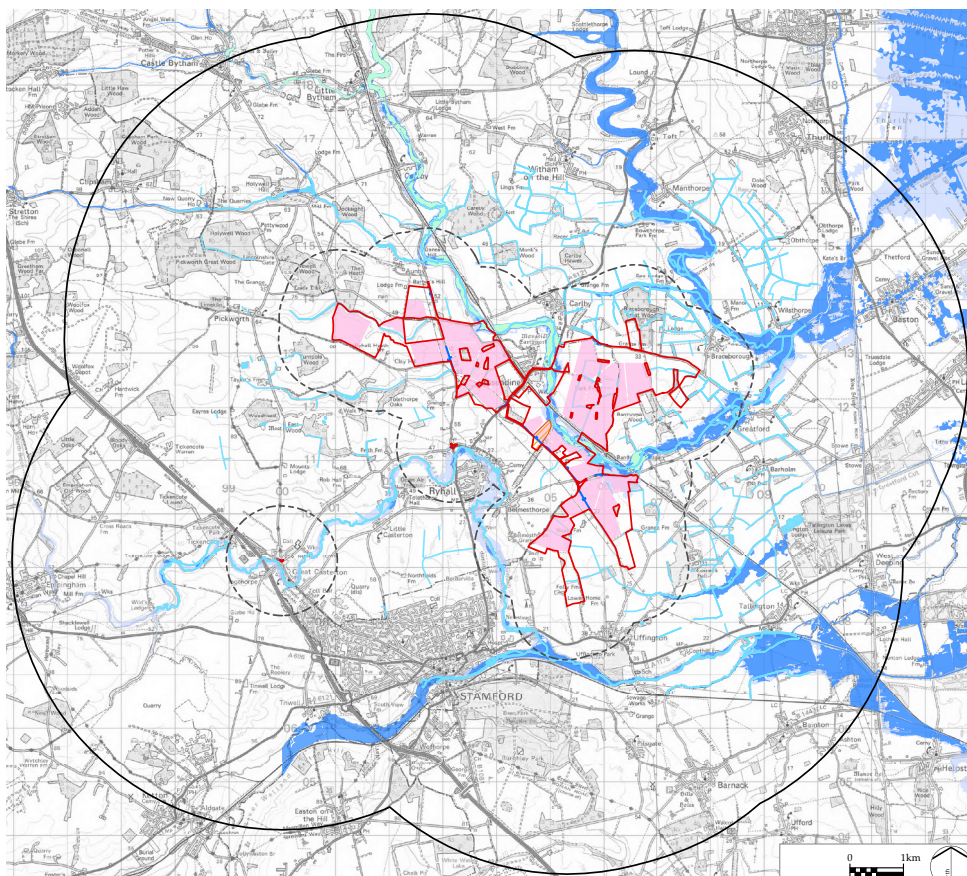
- Walk Farm Barn;
- Wood Farm;
- Manor Farm;
- Grange Farm.

3.43 All are substantial holdings, mostly under arable cropping and management and within Nitrate Vulnerable Zones meaning controls on the use of fertilisers. For all of the farm businesses, the land within the Order limits represents only a proportion of their wider agricultural holdings.

3.44 An appreciation of the agricultural land context and distribution of BMV across the Order limits has informed the design of the Proposed Development as detailed in Section 5.



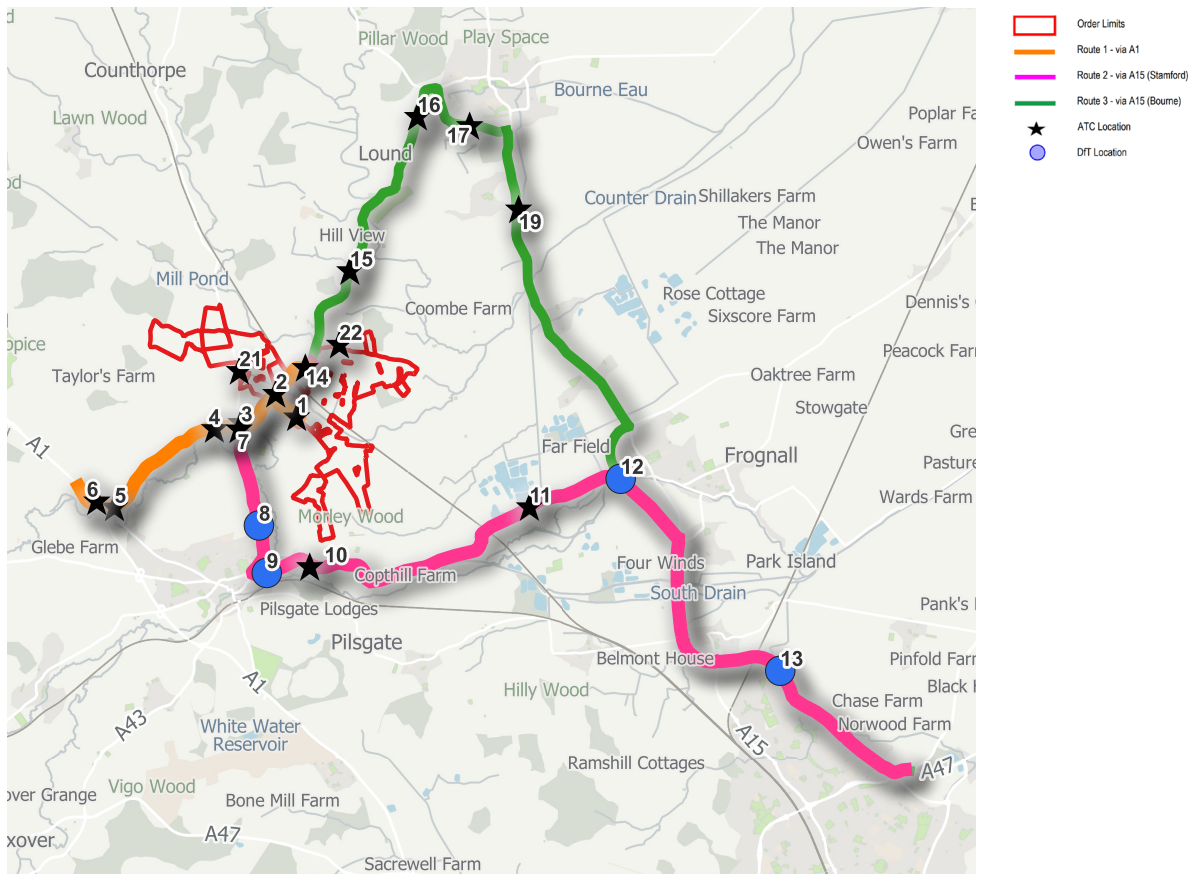
River catchment areas (Figure 11.1 of the ES).



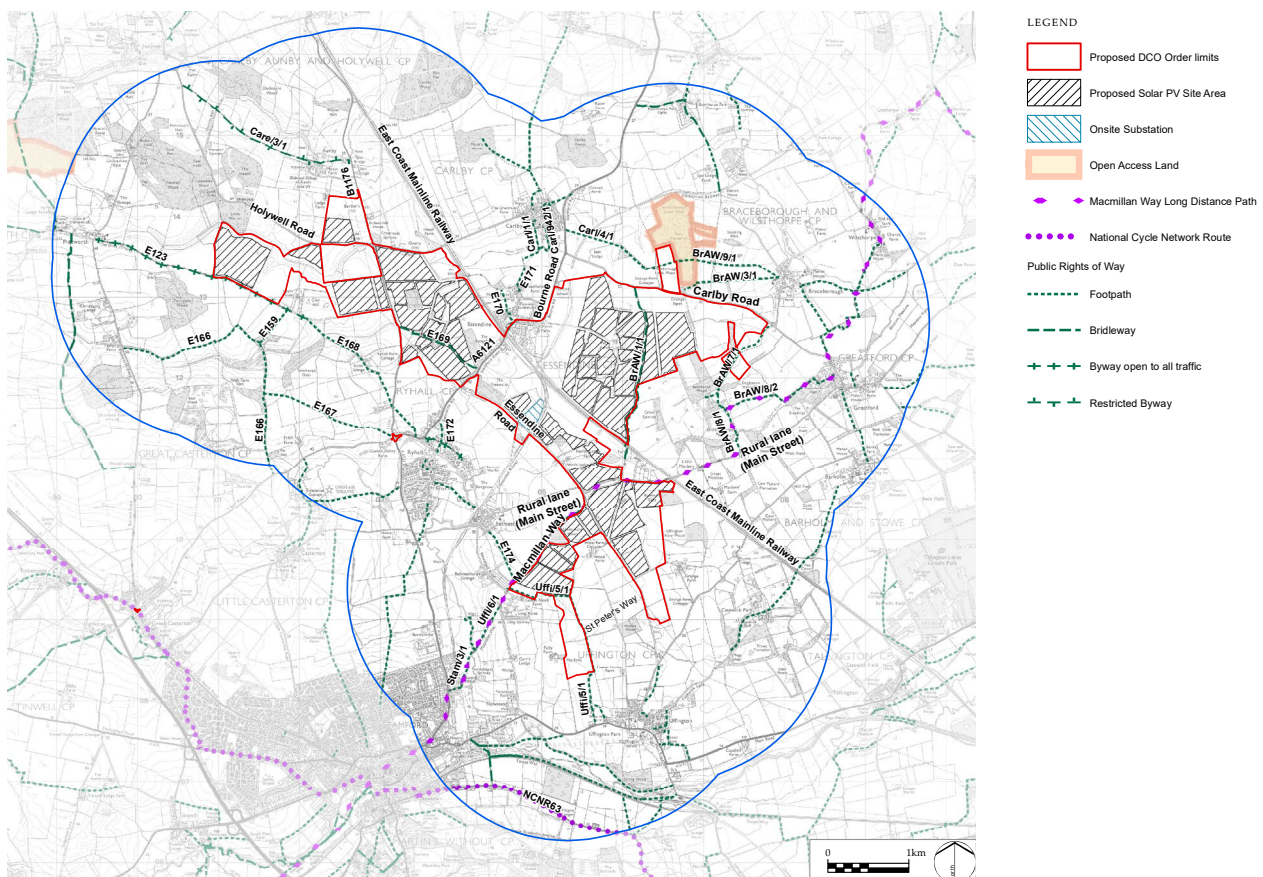
Flood Zones (Figure 11.4 of the ES).

3.45 Water Resources and Ground Conditions

- 3.46 Water resources and ground conditions is considered in detail in **Chapter 12: Water Resources and Ground Conditions** of the ES. The Order limits is within the River Glen Basin District and Welland Management Catchment. The West Glen River bisects through the north and east of the Order limits and flows north-west to south-east. The West Glen River is an Environment Agency (EA) designated Main River.
- 3.47 The River Gwash is located approximately 50 metres (m) south of the Order limits at its nearest point and flows west to east and ultimately discharges into the River Welland approximately 1km south of the Order Limits. The River Gwash is also an EA Main River.
- 3.48 The majority of the Order limits are in Flood Zone 1 with areas closer to the West Glen River in Flood Zones 2 and 3. There are limited areas within the Order limits that are of risk of surface water flooding of up to 0.6m.
- 3.49 The British Geological Survey (“BGS”) Geoindex 1:625,000 Hydrogeology map shows that the Order limits is underlain by aquifers of the Inferior Oolite Group, the Great Oolite Group and the Kellaways Formation and Oxford Clay Formation.
- 3.50 The BGS Geoindex 1:625,000 Hydrogeology map shows that the north-west extent of the Order limits is underlain by the Inferior Oolite Group, a ‘highly productive aquifer’ where flow is virtually all through fractures and other discontinuities and is described as “yielding up to 40l/s in Lincolnshire. Copious springs at outcrops, and is brackish at confined depths”.
- 3.51 The central section of the Order limits is underlain by the Great Oolite Group, a ‘moderately productive aquifer’ where flow is virtually through all fractures and other discontinuities. This is described as a significant limestone aquifer producing large yields.
- 3.52 The eastern extent of the Order limits is underlain by the Kellaways Formation and Oxford Clay Formation aquifer. Its character is described as “rocks with essentially no groundwater” which is due to “largely clays confining underlying aquifers. Kellaways Sand near base yields small quantities, often brackish”.
- 3.53 Desk studies have highlighted that no active landfill sites are present within the Order limits; however, industrial works (Essendine Industrial Estate) and transport infrastructure (the East Coast Mainline Railway) and associated machinery, which are both present adjacent to the Order limits, may give rise to isolated areas of contamination.
- 3.54 Three active Upper Tier Control of Major Accident Hazards (COMAH) sites are recorded within the Essendine Industrial Estate, all registered to The Heys Group Ltd. A Notification of Installations Handling Hazardous Substances (NIHHS) is also registered to Stamford Storage Limited within the industrial estate but is ‘Not Active’. Planning Hazardous Substances Consents have also been granted to Stamford Storage and Baxters Warehousing Peterborough Ltd within Essendine Industrial Estate.
- 3.55 Historic mapping indicates the presence of several former gravel pits and two former landfill sites within the southern area of the Order limits. One of the former landfill sites is recorded as accepting household waste while the other is a Local Authority Landfill site recorded as accepting dry domestic and construction waste which was operational until 1979.
- 3.56 Historical mapping also indicates that the centre of the Order limits is located on land that was used for the quarrying of sand and clay. Similarly, there are several disused gravel and stone pits in the northern extent of the Order limits which is also in close proximity to areas of landfilling, with the potential for contamination which could migrate to the Order limits.



Potential construction routes (Figure 9.2 of the ES).



Public Rights of Way (Figure 1 of Appendix 6.5 of the ES) .

3.57 Access and Movement

- 3.58 The A1, which connects Grantham and Stamford, is located approximately 6km west of the centre of the Order limits. The A47 is located to the south of the Order limits and passes through Peterborough. The A47 is accessed via the A15, which connects Bourne and Peterborough, which is located approximately 6.5km east of the centre of the Order Limits.
- 3.59 The A6121, which connects Ryhall, Essendine and Carlby, separates the north-western extent of the Order limits from the remainder, routing on a general north-east to south-west alignment. The B1176 segments the north-westernmost extent of the Order Limits and is routed on a general north-south direction.
- 3.60 A number of the local roads are subject to weight restrictions (primarily <7.5t) allowing for access only by vehicles below this weight limit.
- 3.61 The recreational resource, within the Order limits and its immediate vicinity comprises a variety of byways, bridleways, the MacMillan Way long distance path, footpaths and one area of Forestry Commission open access land at Braceborough Great Wood.
- 3.62 Five Public Rights of Way (PRoW) traverse the Order limits comprising two bridleways and three footpaths, along with the Macmillan Way. A further nine footpaths, one restricted byway, One Byway Open to All Traffic (BOAT) and one area of open access land at Braceborough Great Wood are also present within 500m of the Order limits.
- 3.63 The amenity of these routes generally comprises rolling agricultural countryside characterised by agricultural fields, native woodland and hedgerows, and settlement in the form of farmsteads, villages and small towns. The presence of development and infrastructure such as the East Coast Mainline railway and industrial units at Essendine are regularly visible from the PRoW network in certain locations.
- 3.64 Further information on access and movement is provided in **Chapter 9: Highways and Access** of the ES and the **Amenity and Recreational Assessment** contained at **Appendix 6.5** of the ES.
- 3.65 The need to account for users of these Public Rights of Way and enhance connectivity in the area has informed the development of the design, as discussed in Section 5.

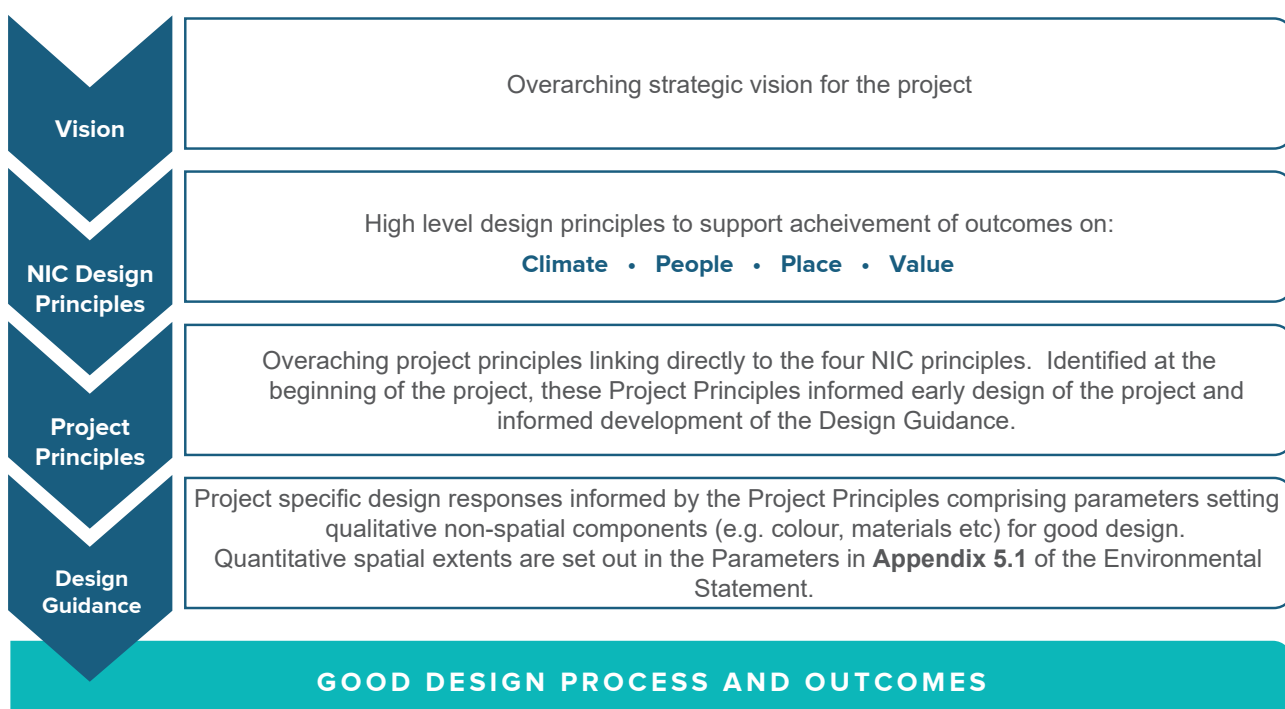


Offset from existing

4.0 Design Approach

4.1 Introduction

- 4.1.1 The approach for achieving good design was considered at the outset of the project. A framework for good design was developed with the purpose of shaping the design and development of the project. The framework for good design provides a line of sight between the vision, NIC Design Principles, project principles and more detailed design responses.
- 4.1.2 The Vision for MPSF was developed by the Applicant and consultant team combining the corporate mission and values of the Applicant with their aspirations for the project, whilst reflecting the urgent need for the UK to transition to low carbon energy generation. Good design was central to this.
- 4.1.3 The NIC's Design Principles for National Infrastructure identifies four principles to help guide the planning, design and delivery of major infrastructure projects: value, climate, people, and places.
- 4.1.4 Mallard Pass Solar Farm adopted the NIC Design Principles ([Ref. 6](#)) of value, climate, people, and places as a framework to guide the identification of project principles which framed design development of the Proposed Development and supported achievement of good design outcomes.
- 4.1.5 As the project has evolved the four NIC Design Principles have been 'localised' and developed into project specific 'Project Principles'. This in turn has led to the development of Design Guidance to inform the design process to ensure the Proposed Development fits sensitively into the local context; mitigates as far as possible adverse environmental effects; respects local communities; and provides enhancements where possible, whilst delivering low carbon energy.
- 4.1.6 The framework for good design is set out as a hierarchy as set out below.



4.1.7 The Design Guidance in this DAS is intended to complement the core design documents. The following core design documents outline the design of the Proposed Development that would be secured by the DCO:

- spatial extent set by the Work Plans;
- Parameters fixed by Appendix 5.1 of the Environmental Statement;
- the Outline Landscape and Ecological Management Plan (oLEMP); and
- the Design Guidance in this DAS.

4.1.8 The Design Guidance will inform detailed design which is to be agreed at the post consent stage should the DCO be granted, pursuant to a DCO Requirement.

4.2 Vision

4.2.1 The Applicant's vision for Mallard Pass Solar Farm is to deliver a project that:



Solar farm development within the existing landscape.

“Supports the urgent need to decarbonise our electricity system, deliver reliable and sustainable low-cost energy, enhance the local environment and be a responsible neighbour”.



4.2.2 The vision is underpinned by four objectives which are to:

- Decarbonising our energy supply
- Increasing the supply of low-cost energy
- Address the biodiversity crisis
- Respect and enhance features in the landscape and promoting connectivity

4.3 NIC Design Principles

4.3.1 The NIC Design Principles have been used to frame the Project Principles.

- **Climate** – Mitigate greenhouse gas emissions and adapt to climate change. MPSF has purposefully looked beyond the boundaries of the project when seeking opportunities to mitigate climate change; design the infrastructure with the flexibility and resilience to adapt to changes in its environment and take advantage of new technology.
- **People** – Reflect what society wants and share benefits widely. MPSF has sought opportunities to improve the quality of life for people who live and work nearby and taken steps to mitigate negative impacts. MPSF has sought the views of local communities throughout the project to ensure the design complements the local character and cultural and provides meaningful benefits to local communities.
- **Places** – Provide a sense of identity and improve our environment. MPSF has looked for opportunities to use infrastructure to benefit the natural and built environment, see how interventions can deliver improvements beyond the Order limits to sustain local ecosystems and support local plans for growth and investment.
- **Value** – Achieve multiple benefits and solve problems well. MPSF has sought to take a ‘people and landscape led’ approach putting these at the centre of design and decision making and utilised a collaborative team problem solving approach to resolve problems and design issues.

4.4 Project Principles

4.4.1 The NIC define the role of principles as:

“Principles should act as reminders to the delivery organisation, a steer in the right direction, and a means of restoring focus to the big picture...Design Principles should be a point of departure, setting out a common understanding of the issues to be addressed.”

(Developing Design Principles for National Infrastructure (NIC, 2018)).

4.4.2 The Project Principles reflect the Project Vision and Objectives as well as the NIC Design Principles and provide a set of references that underpin the approach to developing the Proposed Development. These have been developed as the project design has evolved resulting from further baseline survey work, design evolution, environmental assessment and stakeholder feedback.

4.4.3 These Project Principles have been a set of decision-making reference points that have transcended and informed the design process up to the point of DCO application.

4.4.4 The Project Principles for Mallard Pass Solar Farm have been as follows:

Climate

- C1 – Positively contribute to delivering the UK to net zero by 2050.
- C2 – Design for resilience to future climate change.
- C3 – Prioritise sustainable techniques and technologies in construction and operation.
- C4 – Minimise carbon throughout the project lifecycle.

People

- PE1- Engage openly and transparently with local communities, stakeholders and neighbours, making use of local knowledge to improve our project.
- PE2 – Consider feedback carefully and engage and respond meaningfully.
- PE3 – Behave as a considerate neighbour though both construction and operation.
- PE4 – Respect public amenity.

Place

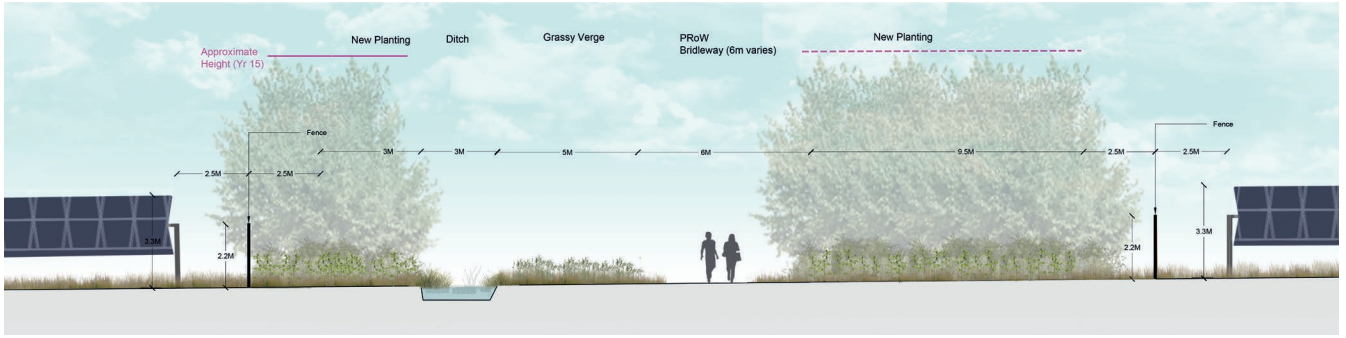
- PL1 – Deliver a project-wide biodiversity net gain.
- PL2 – Maximise opportunities to create appropriate multifunctional spaces to achieve energy generation, continued agricultural use, biodiversity enhancements, water and flood management and green spaces.
- PL3 – Reduce any environmental impact, sensitively designing Mallard Pass Solar Farm to fit into the landscape and explore reasonable opportunities to mitigate potential visual impacts.
- PL4 – Respect the distinctive and unique character of the countryside.
- PL5 – Recognise and respect heritage value, understanding the direct and indirect impacts on cultural heritage assets.

Value

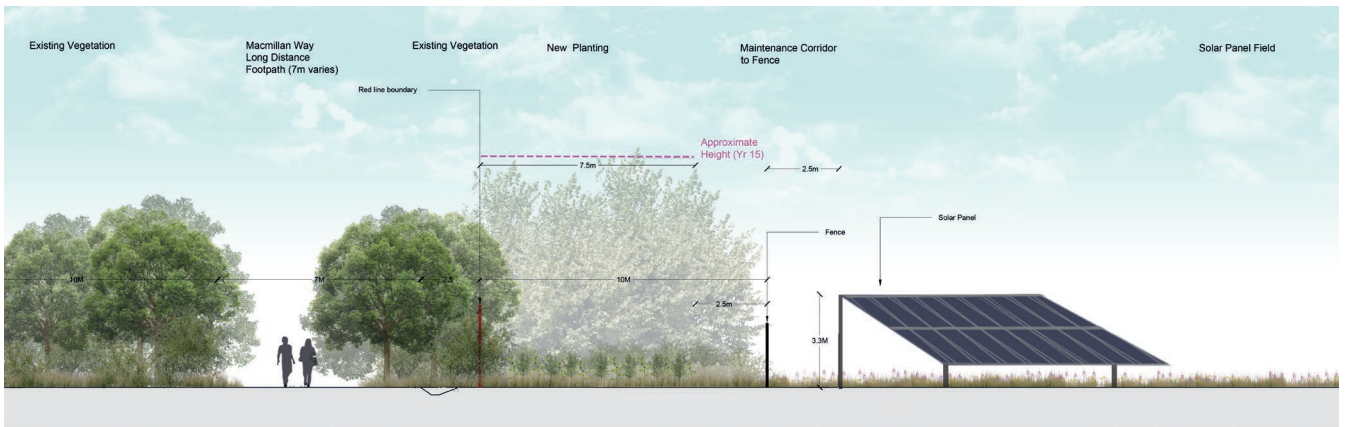
- V1 – Recognise the evolving and advancing nature of technology and seek to ensure we retain the ability to use the best and latest available to maximise efficiency.
- V2 – Learn from comparable projects using best practice to design and deliver our project.
- V3 – Provide wider economic and supply chain benefits, and a positive legacy for the communities in and around Mallard Pass Solar Farm.
- V4 – Deliver a successful project, free from Government subsidy, helping contribute affordable energy to the national supply.

4.5 Design Guidance

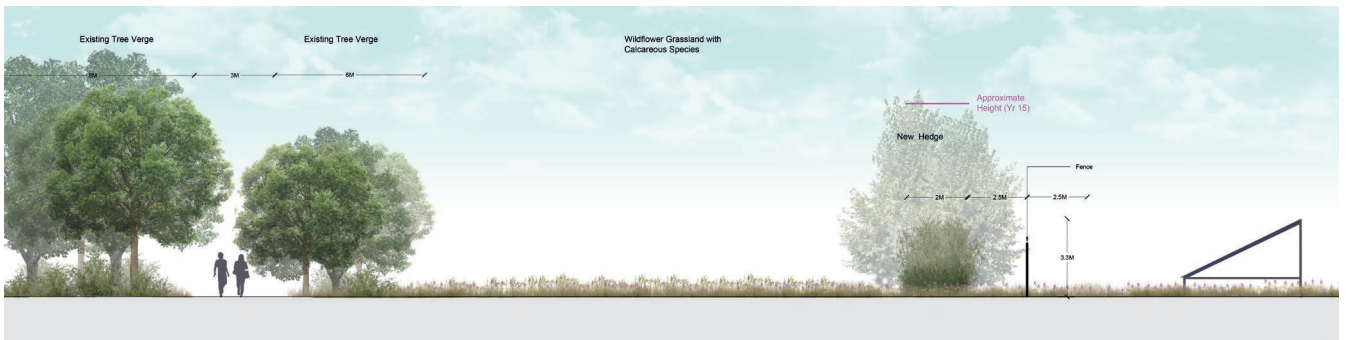
- 4.5.1 To inform the design process for post-DCO consent the Applicant has developed Design Guidance which will support the practical application of the Project Principles for detailed design, within the spatial extent parameters set by the Work Plans; the quantitative Parameters set out in **Appendix 5.1** of the Environment Statement; and the Green Infrastructure proposals set out in the **oLEMP**, through the setting of specific design requirements for the detailed design stage. As noted previously design is both a process and outcome and the guidance encompasses both process and physical outcomes.
- 4.5.2 The ***Illustrative Layout Plans*** that have been submitted with the DCO Application **[EN010127/APP/2.3]** sets out examples, not sought to be secured within the DCO application, of how the Proposed Development could look with the ***Design Guidance, Works Plans, Parameters*** and **oLEMP** taken into account. The Design Guidance will frame the achievement of a good design outcome within the project parameters.
- 4.5.3 As the Design Guidance is intended to inform detailed design, the DCO provides that a Design Statement explaining how this is achieved should be presented in support of discharging the detailed design Requirement, to ensure that it can be demonstrated that this has been the case when the design is presented to local planning authorities for approval.



Indicative section through bridleway (BrAw/1/1).



Indicative section through Macmillan Way long distance path.



Indicative section through The Drift, a Byway Open to All Traffic (BOAT).

- 4.5.4 The Design Guidance is set out below alongside their relationship with the relevant Project Principles. For example, aligned with Project Principle C1, Design Guidance C1.1 has been set. Some of the Design Guidance is relevant across Project Principles. Some of the Project Principles have not led to Design Guidance because they have been addressed in other ways e.g. through influence on the design, layout and extent of the Proposed Development during the pre-application stage that are set out on the **Works Plans, Parameters** and in the **oLEMP**; and the methods of delivery and operation that are secured by the management plans secured through DCO Requirements.

Climate

C1 - Positively contribute to delivering the UK to net zero by 2050.

- C1.1 - The Proposed Development will make use of best available technology maximising the efficiency of power generation.

C2 - Design for resilience to future climate change.

- C2.1 – All new planting specifications will be resilient to a changing climate to ensure longevity of planting throughout the lifespan of the project.
- C2.2 – All new buildings, PV Arrays and surface water drainage systems will be resilient to changing climate such as increased rainfall and wind speeds.
- C2.3 – Health and safety plans will be required to account for potential climate change impacts on workers, such as flooding and heatwaves.
- C2.4 – Storing materials outside of flood extent as far as reasonably practicable.
- C2.5 – Appointing at least one designated Flood Warden who is familiar with the risks and remains vigilant to news reports, Environment Agency flood warnings and water levels of the local waterways.
- C2.6 – Electrical infrastructure to be resilience to fluvial and pluvial flood events.

C3 - Prioritise sustainable techniques and technologies in construction and operation.

- C3.1 – Encouraging the use of lower carbon modes of transport by identifying and communicating local bus services and pedestrian and cycle routes to and from the Order limits to all construction staff and providing facilities for the safe storage of cycles.
- C3.2 – Contractors to consider sustainable resource and waste management measures to use material resources efficiently, reduce waste at source, reduce waste that requires final disposal to landfill and apply the principles of the waste hierarchy.
- C3.3 – Adopting the Considerate Constructors Scheme (CCS) (or its equivalent) to assist in the reduction of pollution, including GHG, from the Proposed Development by employing industry best practice measures.
- C3.4 – Implementing a Travel Plan to reduce the use of private car journeys by construction staff and employees.
- C3.5 – Increasing recyclability by segregating construction waste to be re-used and recycles where reasonably practicable.
- C3.6 – Disposing of construction waste locally where reasonably practicable to reduce emissions associated with transportation.
- C3.7 – Designing, constructing and implementing the Proposed Development in such a way as to minimise the creation of waste and maximise the use of alternative materials with lower embodied carbon such as locally sourced products and materials with a higher recycled content where feasible.
- C3.8 – Reusing site-won materials to minimise the use of natural resources and unnecessary materials (e.g. reusing excavated soil for fill requirements).

C4 – Minimise carbon throughout the project lifecycle.

- C4.1 – Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
- C4.2 – Waste will be managed in accordance with the waste hierarchy.
- C4.3 – Requiring the contractor to report on fuel consumption and carbon footprint following the construction of the Proposed Development.
- C4.4 – Prevent idling vehicles by switching vehicles and plant off when not in use and ensuring that all construction vehicles conform to current EU emissions standards.
- C4.5 – Conducting regular and planned maintenance of the construction plant and machinery to optimise efficiency.

People

PE1- Engage openly and transparently with local communities, stakeholders and neighbours, making use of local knowledge to improve our project.

- PE1.1 – Contractors to provide clear means of communication during the construction and decommissioning phase.
-

PE2 - Consider feedback carefully and engage and respond meaningfully.

PE3 - Behave as a considerate neighbour though both construction and operation.

- PE3.1 - Monitoring to be undertaken throughout construction and operation phase.
 - PE3.2 – The design and installation of electrical cable that cross existing underground utilities will be undertaken in consultation with the statutory undertakers.
 - PE3.3 – The design and installation of electrical cable that cross the East Coast Mainline will be undertaken in consultation with Network Rail.
-

PE4 - Respect public amenity.

- PE4.1– The Proposed Development will be sensitively sited and offset from residential properties.
- PE.4.2 – 50m offset of solar stations from PRoW.
- PE.4.3 – 250m offset of solar stations from residential properties.
- PE4.4 – The Proposed Development will create new opportunities for education on climate change via way of interpretation boards.
- PE4.5 – The Proposed Development will create opportunities for people to engage with the natural world in the form of nature areas, viewing hides and interpretation boards.
- PE4.6 – The Proposed Development will seek to minimise the potential effects of Electromagnetic Interference.
- PE4.7 – CCTV monitoring will be along the perimeter and inward facing.

Place

PL1 - Deliver a project-wide biodiversity net gain.

- PL1.1 – All internal access tracks and cable routes will use existing hedgerow crossings and / or gaps in the hedgerows wherever possible.
-

PL2 - Maximise opportunities to create appropriate multifunctional spaces to achieve energy generation, continued agricultural use, biodiversity enhancements, water and flood management and green spaces.

- PL2.1 – The majority of Mitigation and Enhancement Areas identified on the Green Infrastructure Strategy will support agricultural uses, including arable production with the creation and management of skylark mitigation plots within them.
-

PL3 - Reduce any environmental impact, sensitively designing Mallard Pass Solar Farm to fit into the landscape and explore reasonable opportunities to mitigate potential visual impacts.

- PL3.1 – Site access junctions and internal access tracks and cable routes will use existing hedgerow crossings and / or gaps in the hedgerows wherever possible.
 - PL3.2 – The Proposed Development will be cognisant of and contribute positively where possible to conservation works planned by Anglian Water to the West Glen River.
 - PL3.3 – All solar stations will be located within Flood Zone 1.
 - PL3.4 – Grid connection route will comprise below ground cables.
 - PL3.5 – Perimeter fencing and CCTV security system around the Solar PV Site will comprise of wooden posts and wire mesh fencing.
 - PL3.6 – the colour scheme and materials for built components of the Proposed Development will be sensitive to its context and agreed with the LPA.
 - PL3.7 – Except at the Onsite Substation, no visible lighting will be used. Infrared lighting will be used for the CCTV security system.
 - PL3.8 - Drainage infrastructure is to be an integrated element of the landscape design.
 - PL3.9 – Impermeable surfaces to be minimised as far as possible to reduce surface water run off.
 - PL3.10 – String inverters shall not exceed the height of the PV Modules.
 - PL3.11 - The PV Modules are to be either black or dark blue (or similar dark colour).
 - PL3.12 – The Mounting Structures will be anodised aluminium alloy or galvanised steel (or an equivalent material/colour) with rough matt finish.
 - PL3.13 – The Onsite Substation compound is to be secured by a metal fence.
 - PL3.14 - Solar Stations and Access Tracks to be located on lower grade agricultural land as far as practically possible.
-

-
- PL3.15 – The PV Tables will be either Fixed South Facing or Single Axis Trackers and the arrangement of PV Tables will be the same across all PV Arrays.
 - PL3.16 - Individual components of the Solar Station will be mounted on a concrete pad or concrete columns or metal skids surrounded by permeable hardstanding.
 - PL3.17 – No permanent lighting of the Onsite Substation.
 - PL3.18 - The electrical cables will avoid root protection areas of trees and hedgerows, except where a hedgerow crossing is required.
 - PL3.19 - The electrical cables will avoid Local Wildlife Sites, except where a hedgerow or road crossings and or cabling within the adopted highway is required or where other separation is required to avoid existing services.
 - PL3.20 - Data cables will be installed within the same trench as the electrical cables.
 - PL3.21 – Primary and secondary construction compounds will consist of permeable hardstanding.
 - PL3.22 – The temporary construction passing places will be removed and green infrastructure reinstated as soon as practicably possible after construction is completed.
-

PL4 - Respect the distinctive and unique character of the countryside.

- PL4.1 – All new planting will have regard and respond to existing geology and soil characteristics reflective of the local area.
 - PL4.2 - Use of existing internal tracks will be maximised.
 - PL4.3 - Access track crossings of PROWs will be minimised.
 - PL4.4 - Cabling routes will run alongside access tracks as much as possible avoiding wider excavations.
 - PL4.5 - Structural planting is to consist of native and indigenous species and wherever possible from local provenance.
 - PL4.6 – Proposed hedgerows will be planted with a variety of fruiting species providing foraging opportunities.
 - PL4.7 – Associated infrastructure will be consolidated into specific areas so as not to spread across the Site.
-

PL5 - Recognise and respect heritage value, understanding the direct and indirect impacts on cultural heritage assets.

- PL5.1 – New planting will be provided as illustrated on the Green Infrastructure Strategy Plan.
- PL5.2 – Foundation design to consider and minimise impacts to buried archaeology through the choice of foundation type .

Value

V1 – Recognise the evolving and advancing nature of technology and seek to ensure we retain the ability to use the best and latest available to maximise efficiency.

- V1.1 – Learn from comparable projects using best practice to design and deliver our project.
- V1.2 – Provide wider economic and supply chain benefits, and a positive legacy for the communities in and around Mallard Pass Solar Farm.
- V1.3 – Deliver a successful project, free from Government subsidy, helping contribute affordable energy to the national supply.
- V1.4 – Respect the wider landscape and the intrinsic value of the countryside and natural environment.
- V1.5 – Respect and respond to features of heritage value.

V2 – Learn from comparable projects using best practice to design and deliver our project.

- V2.1 – Provide wider economic and supply chain benefits, and a positive legacy for the communities in and around Mallard Pass Solar Farm.

V3 – Provide wider economic and supply chain benefits, and a positive legacy for the communities in and around Mallard Pass Solar Farm.

- V3.1. – The Project will adhere to the Outline Skills and Employment Management Plan and any detailed version of this plan approved by the local planning authority pursuant to the DCO.

V4 – Deliver a successful project, free from Government subsidy, helping contribute affordable energy to the national supply.

V5 – Respect the wider landscape and the intrinsic value of the countryside and natural environment.

- V5.1 – All existing Public Rights of Way will be retained in their existing alignment and complemented by a total of 8.1km of new permissive paths that link to wider network and creating joined up routes.
 - V5.2 – All fields comprising solely of Grade 2 land within the Site will remain in arable production or proposed green infrastructure if the field size is unviable.
 - V5.3 – Fencing surrounding the PV Arrays will be set back at least 15m either side from existing and proposed permissive PRoW except where there is a necessity for them to cross routes for internal access.
 - V5.4 – Fencing surrounding the PV Arrays will not to be constructed through existing hedgerows or across ditches
 - V5.5 - Fencing surrounding the PV Arrays will be offset at least 15m from existing woodlands.
 - V5.6 – Horizontal Directional Drilling (HDD) and fencing surrounding the PV Arrays will be offset at least 10m either side from main rivers & ponds and 6m from ditches.
 - V5.7 - Fencing surrounding the PV Arrays will be offset at least 10m either side from all existing hedgerows.
 - V5.8 – Fencing surrounding the PV Arrays will be offset at least 15m to statutorily and locally designated wildlife sites.
 - V5.9 – Fencing surrounding the PV Arrays will be offset at least 30m from main badger setts.
 - V5.10 – Scrapes and otter holts will be provided along the West Glen River Corridor in accordance with the oLEMP.
 - V5.11 - Bird and bat boxes will be placed throughout the Site in accordance with the LEMP.
 - V5.12 – Fencing to allow for the movement of small mammals throughout the PV Arrays.
 - V5.13 – Fencing surrounding the PV Arrays will be offset at least 15 times the width of the stem diameter of Veteran Trees.
-

V6 - Respect and respond to features of heritage value.

- V6.1 –New planting will be provided as illustrated on the Green Infrastructure Plan.



Solar arrays.

5.0 Design Evolution

- 5.1 This section summarises the design evolution of the Proposed Development. It considers matters from the point that the initial site selection process was completed (as discussed in the site selection report appended to the **Planning Statement**). The NIC Design Principles ([Ref. 6](#)), Project Principles and Design Guidance have shaped the design of the Proposed Development throughout, informed by consultation and findings of technical analysis as they became available, with the design responding to as part of an iterative design process. The evolution of the design of the Proposed Development are also set out within Chapter 4 of the ES.
- 5.2 The design of the Proposed Development has been shaped through and evolved as part of a landscape led approach. The design layout and the Green Infrastructure Strategy, which underpins the landscape led approach, has been developed with an understanding of the environmental context summarised in Section 3 of this document and also the Green Infrastructure aspirations for the area set out in the following documents:
- [Rutland Core Strategy \(2011\) \(Ref. 10\)](#)
 - [Policy CSS23 Green Infrastructure](#): which seeks to safeguard and improve and enhance the multifunctional greenspaces.
 - [Policy CS21 The Natural Environment](#): which seeks to protect the quality and diversity of the natural environment including landscape character and maximise opportunities for restoration, connection and enhancement.
 - [Policy SP19 Biodiversity and Geodiversity Conservation](#): which seeks to conserve and enhance biodiversity and geodiversity including designated sites.
 - [Policy SP21 Important Open Spaces and Frontages](#): which seeks to protect open spaces that have a positive contribution to environmental value and / or setting by virtue of their character, landform, vegetation or presence of special features such as streams or ponds.
 - [Leicestershire and Rutland Biodiversity Action Plan 2016 – 2026 \(Ref. 11\)](#)
 - Promote management, restoration and creation of BAP Priorities Habitat through the planning system and other local actions.
 - Create new habitat corresponding to one of three broad categories throughout Leicestershire and Woodland
 - Wetland
 - Woodland
 - Open Land
 - Create new habitat on intensively managed land to increase habitat diversity.
 - In areas where historic habitats remain use new habitat creation to buffer or link sites if possible.
 - [Rutland Landscape Character Assessment \(Ref. 7\)](#)
 - As detailed in Section 4.9.
 - [South Kesteven Local Plan \(2020\) \(Ref. 12\)](#)
 - [Policy N1: Landscape Character](#) which seeks to conserve, enhance or restore the landscape characters of the district.
 - [Policy EN2: Protecting Biodiversity and Geodiversity](#) which seeks to facilitate the conservation, enhancement and promotion of the District's natural environment.

- **Policy EN3: Green Infrastructure** which seeks to maintain and improve the GI network within the district ensure that existing and new green infrastructure is considered and integrated into the scheme design, taking opportunities to enrich biodiversity habitats, enable greater connectivity and provide sustainable access for all.

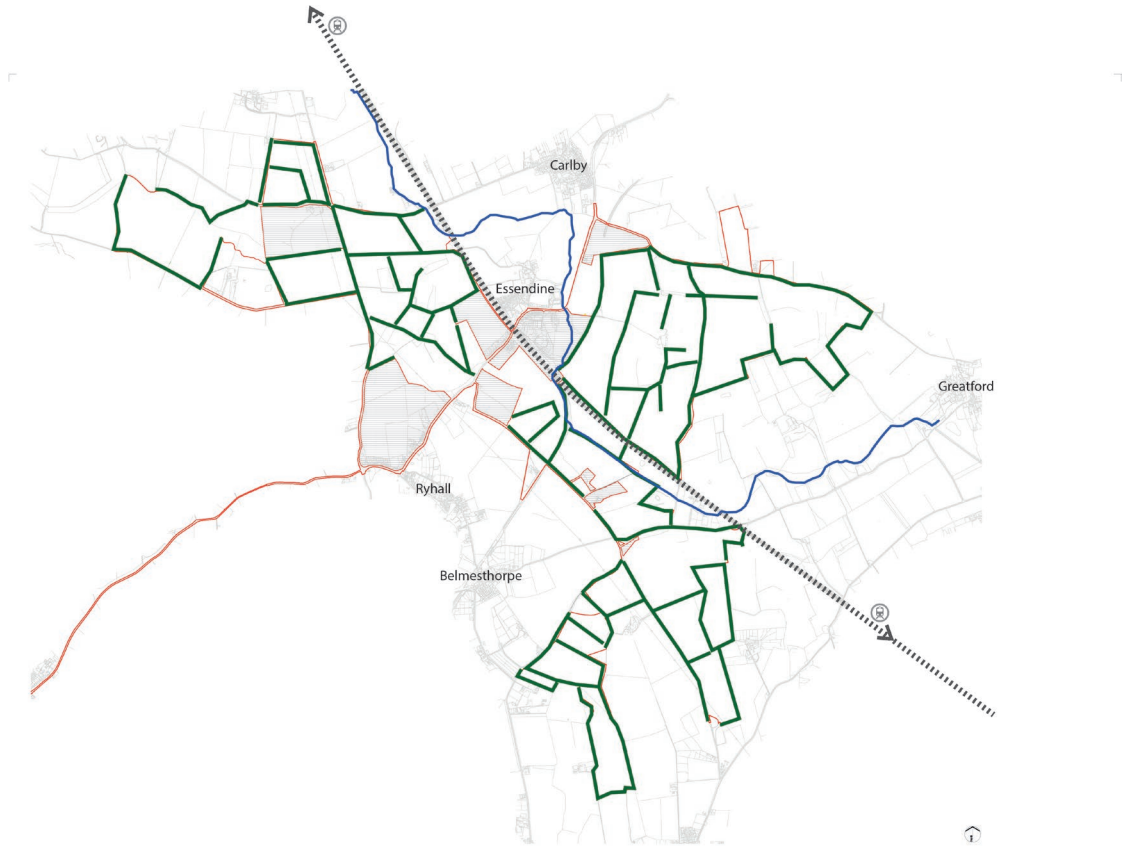
- **South Kesteven Green Infrastructure Strategy (undated) (Ref. 13)**
 - Which sets out a strategic plan of GI within the district and advocates the creation of limestone grassland.
- **Design Guidance for Rutland and South Kesteven SPD (2021) and Design Guidance for Rutland (2022) (Ref. 14)**
 - Related to residential and commercial development, this document sets out good design approaches and principles emphasising the importance of understanding place and context. Sections 5B and 5D consider ‘responding to climate change’ and ‘a strong landscape structure’ respectively. The Project Principles and Design Guidance set out within the DAS are informed and respond to these requirements and ensure the Proposed Development responds sensitively to its context.
- **Lincolnshire County Council’s Green Masterplan (2020 – 2025) (Ref. 15)**
 - A multi-year programme running to 2025 ensure that Lincolnshire meets the national carbon reduction targets.

5.3 Landscape Led Approach

5.4 Based on the above policy aspirations and initial desk-top and field studies, the following key design considerations were identified as being fundamental to our landscape led approach:

- **Treading Lightly** – the retention of existing vegetation wherever possible with the aspiration of ‘treading lightly’ within the landscape and respecting the existing environmental fabric.
- **Ecological Enhancement at the Landscape Scale** – the identification of calcareous grassland, the West Glen River, and existing PRoW as key structuring landscape scale components on which to build the Proposed Development around.
- **Respecting Residential Amenity** – respecting the visual amenity and setting of residential properties and settlements near to the Order limits and providing sufficient space for them to ‘breathe’.
- **Realising Recreational Opportunities** – retaining all existing PRoW within the Order limits, providing sufficient offset to them (at least 15m either side) including new planting, and also unlocking new opportunities for recreation and access to nature including relinking severed routes and wider network connectivity.
- **Maintaining Agricultural Production** – Complete fields consisting solely of Grade 2 agricultural land have been removed from the Solar PV Site whilst, unless over limestone geology conducive to calcareous grassland, Mitigation and Enhancement Areas are to remain in arable production with the creation of skylark plots to enhance nesting opportunities.

5.5 These key factors have formed the basis of the landscape led design response and have evolved and been refined through the DCO process as set out in the following sections.



Treading lightly.



Ecological enhancement at the landscape scale.



Respecting residential amenity.



Realising recreational opportunities.

5.6 Early design considerations

5.7 Following site selection by the Applicant, as reported in the Site Selection Report (appended to the Planning Statement), all available land within this boundary was then subject to an initial appraisal to identify land suitability to accommodate the Proposed Development.

5.8 This appraisal focused on the suitability of the individual fields for PV Arrays and based on environmental, social, economic factors, site visits and desktop analysis by all of the technical disciplines, areas were identified as not being suitable for accommodating PV Arrays were removed, based on the Project Principles, for the following reasons

- **Setting of Essendine (PE4 and PL5)** – the extent of solar development was pulled back from the settlement boundary of Essendine, to the east of the disused railway line to reduce potential landscape and visual impacts, respect public amenity of the residents of Essendine, as well as impacts to the setting of Essendine Castle Scheduled Monument recognising and respecting the existing heritage value or nearby heritage assets.
- **Setting of Braceborough (PL5)**– The land to the east of the Solar PV Site was removed because of the potential impacts on the landscape character and the proximity to the Braceborough conservation area, recognising and respecting the existing heritage value of the area.
- **Braceborough Great Wood (PL3 & PE4)** – the fields located to the north of Carlby Road were removed to sensitively fit the Proposed Development within the landscape due to the fields proximity to the ancient woodland, existing residential properties and relatively isolated area of land north of Carlby Road.
- **Burghley House (PL5)** – Two fields in the south-west were removed due to the potential theoretical visibility from Burghley House as the two fields are located on land that slopes towards the River Welland valley and Burghley House to the south recognising and respecting the heritage value of the area.
- **Little Warren Wood and Ryhall Pastures and Little Warren Verges SSSI (PL1 and PL4)** – An opportunity was identified to improve connectivity between Little Warren Wood and Ryhall Pastures and Little Warren Verges SSSI. The extent of Solar Arrays was set back from the northern boundary to reflect the offset to arable on the northern side of the ditch that runs through this part of the Order limits. This area will be used to improve green infrastructure connectivity, respecting the distinctive and unique character of the SSSI, which is located outside of the Order limits, whilst also contributing to local biodiversity and aspirations in the Lincolnshire BAP ([Ref. 11](#)).
- **Onsite substation (PL3 and PE4)** – the location of the Onsite Substation was chosen due to its proximity to the existing National Grid Ryhall Substation, minimising the disruption of the export cable route and sensitively co-locating similar infrastructure within an agricultural landscape. The location is also separated from Essendine by the East Coast Mainline, and other clusters of properties and PRoW, respecting public amenity and reducing potential visual impacts.

5.9 Following removal of the areas described above, the remaining area that could potentially accommodate PV Arrays was approximately 570ha. The removed areas were retained in the Order limits as Mitigation and Enhancement Areas to provide opportunities to create appropriate multifunctional spaces to achieve:

- continued agricultural use;
- biodiversity enhancements
- water and flood management
- green spaces;
- new ecological habitats such as wildflower grassland with calcareous species,
- new tree and hedgerow planting; and
- retention of fields for agricultural production with the creation and management of skylark plots.

5.10 This concept layout was presented at Stage 1 Non-Statutory Consultation.

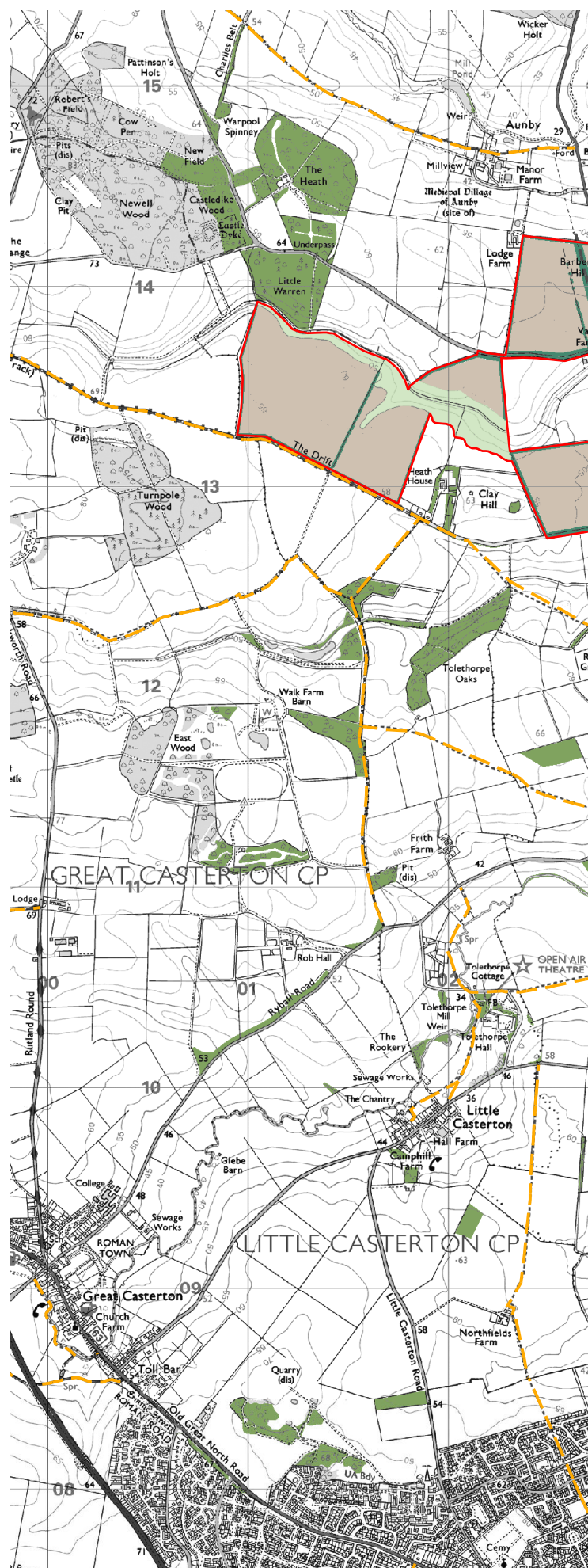
LEGEND

Site Features

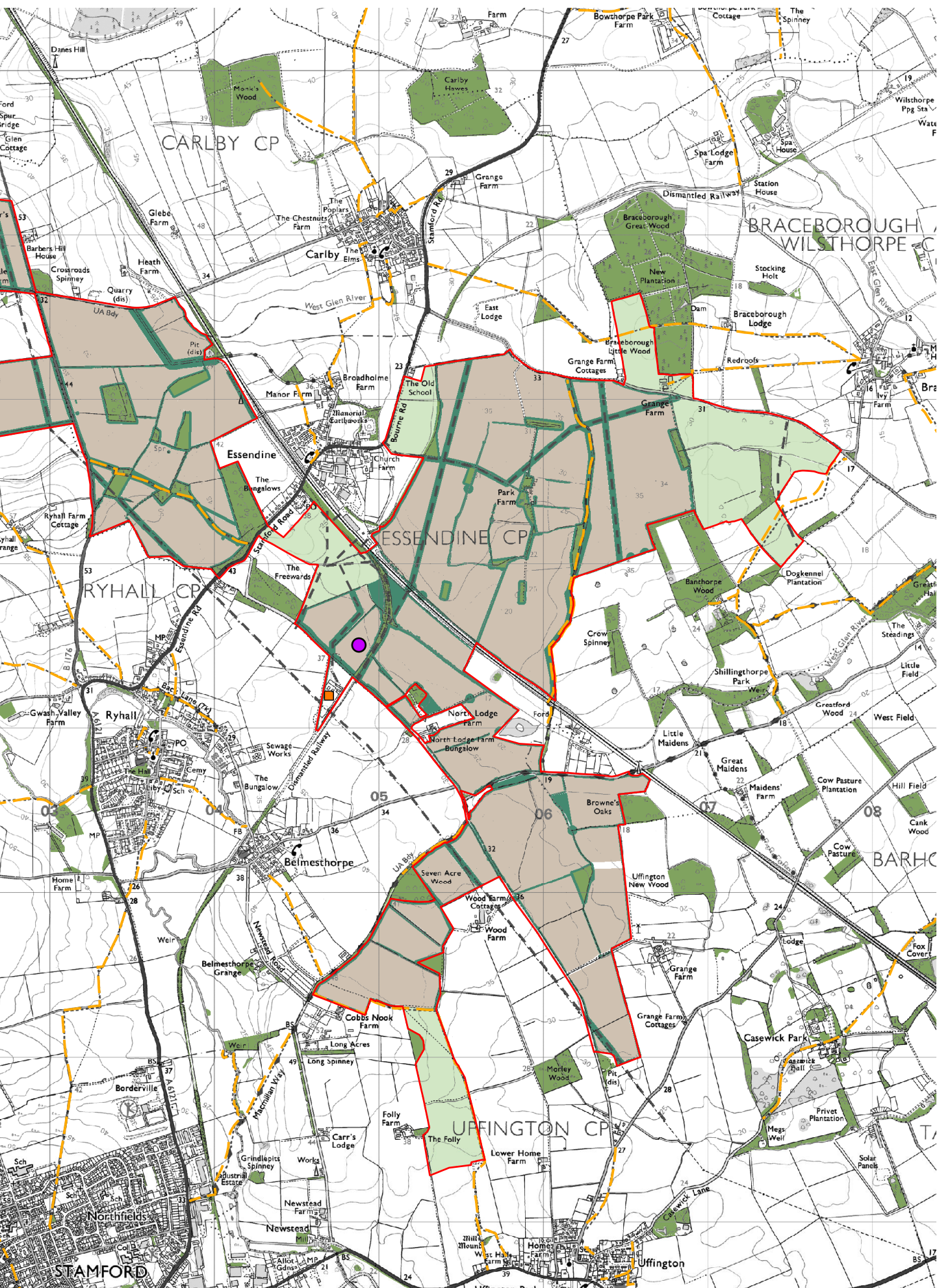
- Order limits
- Existing Utilities (gas, water, sewer and electricity)
- National Grid Ryhall Substation
- Public Right of Way
- Woodland, hedgerows, trees, field boundaries and ditches

Concept Masterplan Proposals

- Solar PV Site
- Potential Mitigation and Enhancement Areas
- Offsets to woodland, trees, hedgerows, ditches, utilities and Public Rights of Way
- Primary Substation



Stage 1 Concept Masterplan



5.11 Design milestone – stage 2 consultation indicative outline masterplan

5.12 Following non-statutory consultation in November 2021, the Stage 1 concept plan was reviewed in light of the comments received from stakeholders and further analysis of baseline information. Based on this feedback, the following changes were made to the Proposed Development for Stage 2 Statutory Consultation:

- **Grade 2 Agricultural Land (PL2)** – following the completion of the agricultural land classification survey, PV Arrays were removed from fields that were identified as consisting entirely of Grade 2 land, to maximise the opportunity for continued viable agricultural use. Some Grade 2 land remains within the Solar PV Site where it does not form a complete field parcel and would be impractical to continue farming in isolation. Given the dispersed distribution of Grade 3a land amongst Grades 3b and 4 across the Order limits, areas of this agricultural grading remain within the Solar PV Site also.
- **Residential Amenity (PE1, PE4, PL3, PL4 and PL5)** – Following feedback from the Stage 1 consultation and further site visits, areas of the Solar PV Site were removed due a combination of potential residential amenity impacts and landscape and visual impacts. The extent of removal was reviewed at each individual location, with a suitable set back recognising and respecting existing or historic landscape boundaries or features.
- **West Glen River (PL1, PL2, PL3, PL4 and V5)** – Areas for PV Arrays were removed along the West Glen River corridor to remove Solar PV Arrays from Flood Zone 3 and the majority of Flood Zone 2 so that it is sensitively located within the flood plain reflecting the concerns raised by local communities during the Stage 1 consultation. The removal of PV Arrays from this location provided the opportunity to create multifunctional spaces for continued agricultural use, biodiversity enhancements, water management and green spaces incorporating permissive paths, that reflect the unique and distinctive character of this area. This corridor connects two Local Wildlife Sites, through the creation of new habitat on intensively managed land, increasing habitat diversity which buffers the West Glen River reducing any potential impacts on protected species using the river corridor and provide ecological habitat enhancement.
- **Access Strategy (PE3 and PL3)** – the access strategy was consolidated rather than use the existing 26 field access points. This was undertaken to minimise disruption on the existing road network during the construction phase as well as minimising potential direct impacts on hedgerows and verges as a result of otherwise needing to widen existing access points.

- **Grassland Planting (PL1 and PL2)** – New wildflower grassland is proposed, which would contain calcareous species reflective of the chalk geology in the west of the Order limits. Grassland underneath the PV Array is also proposed.
- **Woodland/Tree Belt/Hedgerow Planting (PL1, PL3 and PL4)** - A total of 7.5km of new tree belt planting and 13.9km of new hedgerow planting is proposed providing visual screening and biodiversity enhancements at the landscape scale. A small area of woodland is also proposed opposite Wood Farm Cottages.
- **Permissive paths (PL2 and PE4)** - A total of 4.8km of new permissive paths were incorporated into the Green Infrastructure Strategy to strengthen the existing PRow network and provide further opportunities to create appropriate multifunctional spaces that create opportunities for people to engage with the natural world.

5.13 A revised masterplan taking account of the above was presented at Stage 2 Statutory Consultation in Spring 2022.

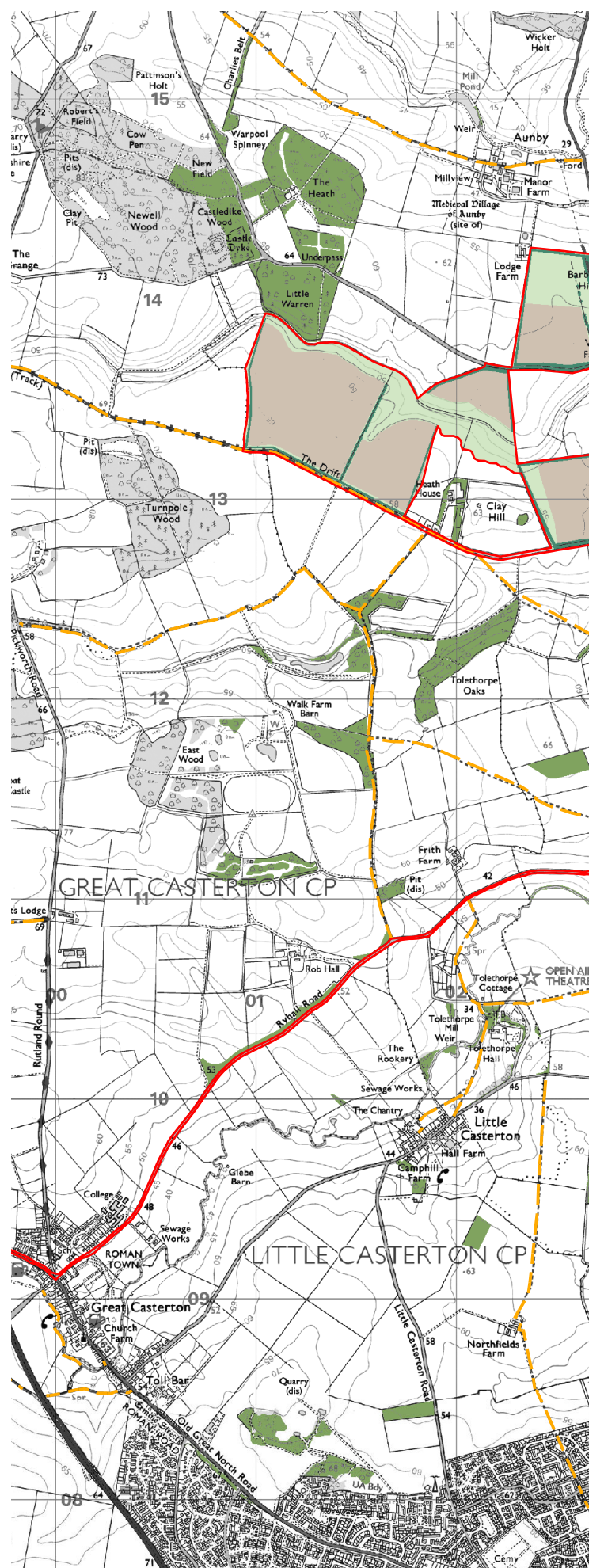
LEGEND

Site Features

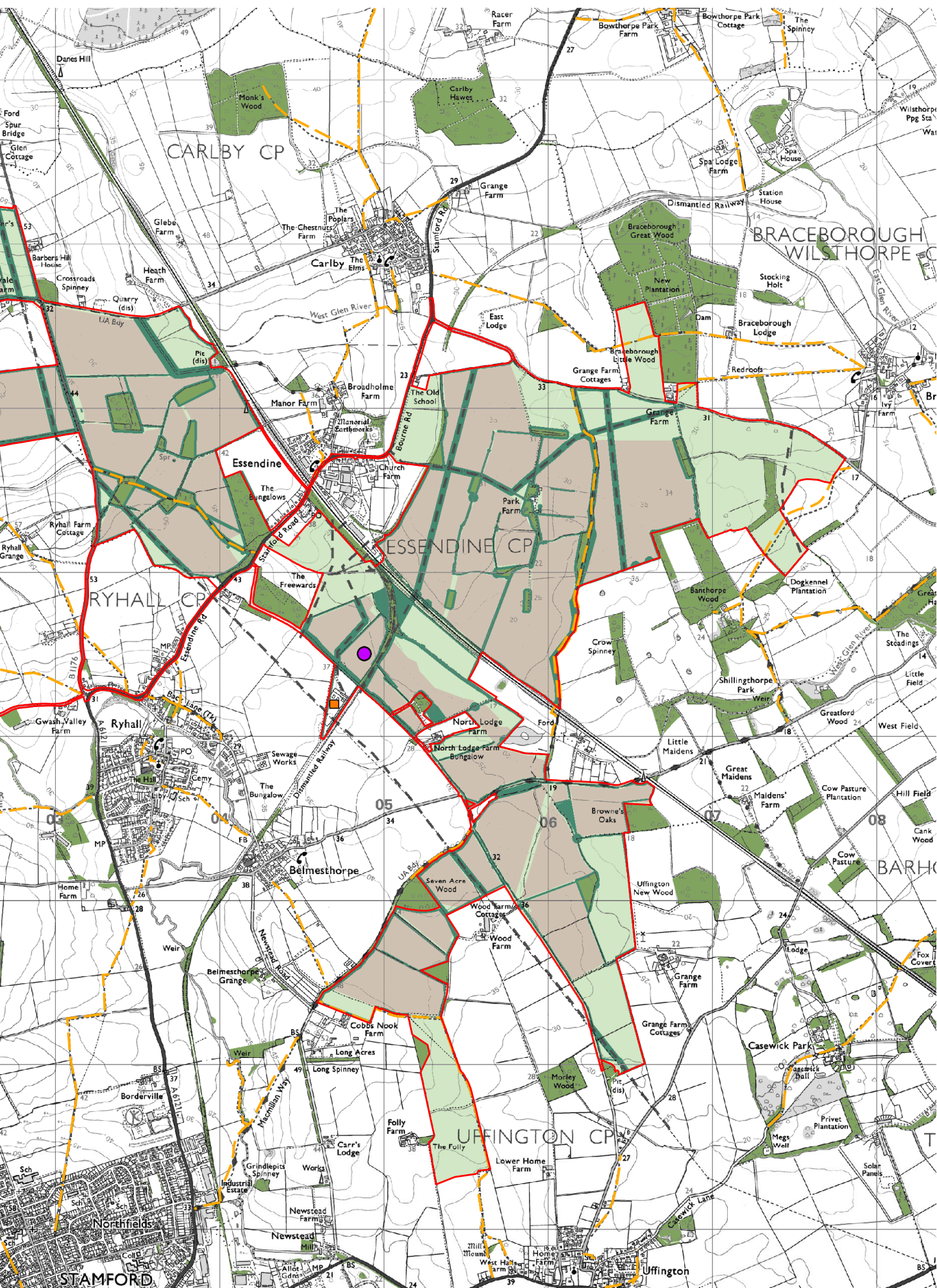
- Order limits
- Existing Utilities (gas, water, sewer and electricity)
- National Grid Ryhall Substation
- Public Right of Way
- Woodland, hedgerows, trees, field boundaries and ditches

Concept Masterplan Proposals

- Solar PV Site
- Mitigation and Enhancement Areas
- Offsets to woodland, trees, hedgerows, ditches, utilities and Public Rights of Way
- Primary Substation



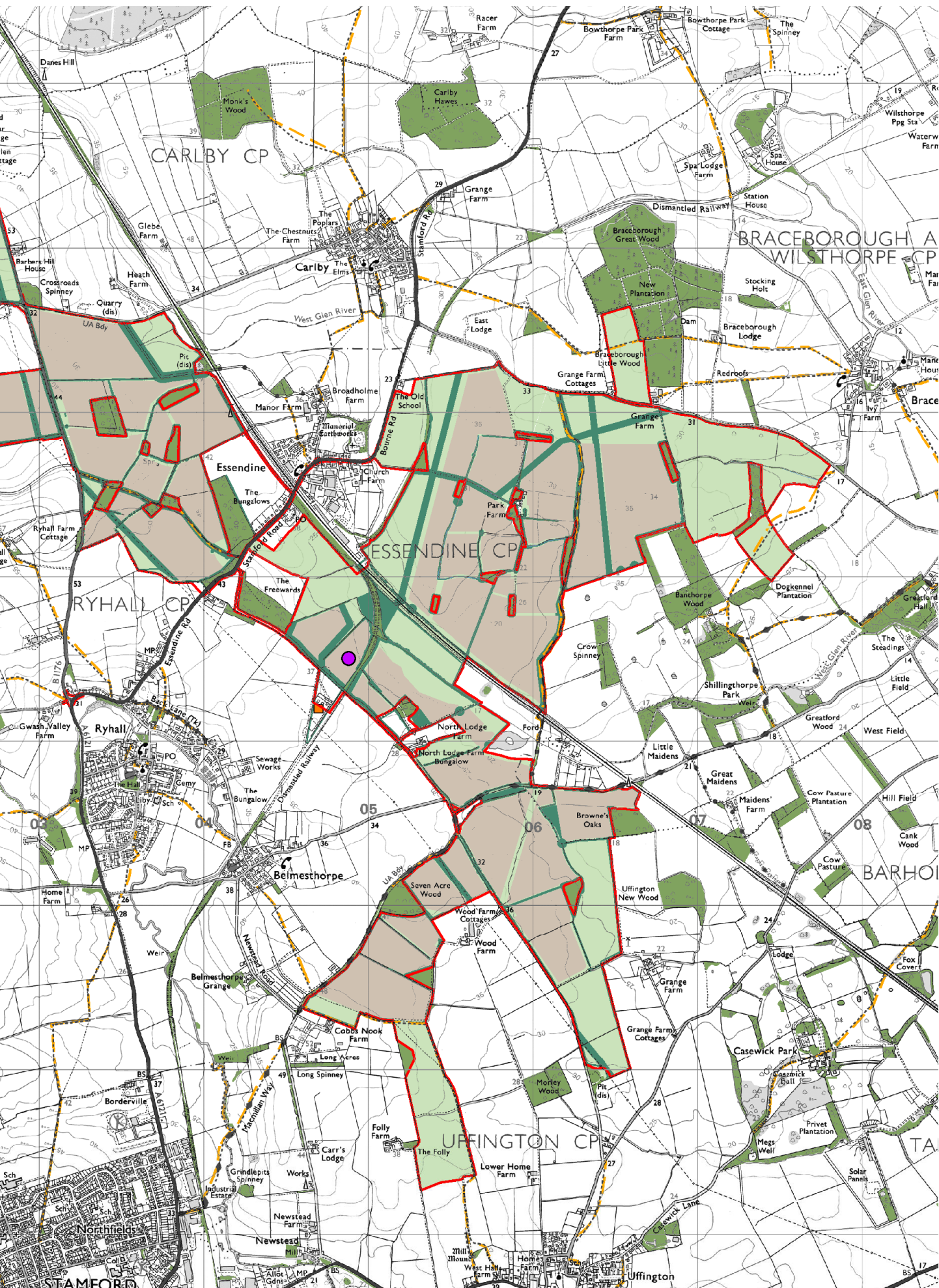
Statutory Consultation: Concept Masterplan



5.14 Design milestone – stage 3 development of the indicative masterplan

5.15 Following Stage 2 Statutory Consultation, the submission design was finalised with the following amends as a result of the Stage 2 feedback:

- Further removal of PV Arrays from the area to the east of Essendine providing greater set back from the settlement, further respecting public amenity of the residents of Essendine and mitigating visual impacts of users travelling north out of Essendine (PL3 and PE4).
- Removal of the Solar PV Site from north of the Drift providing a suitable offset to residential dwellings in the interests of visual amenity (PE4) and maximising the opportunity to strengthen the connection between the Drift Local Wildlife Site and Ryhall Pastures and Little Warren Verges SSSI through the creation of new habitat on intensively managed land.
- Removal of PV Arrays from PRoW at their entry / exit points where they meet roads or lanes to allow users of the PROW network to transition between the public highway and the Solar Arrays (PE4).



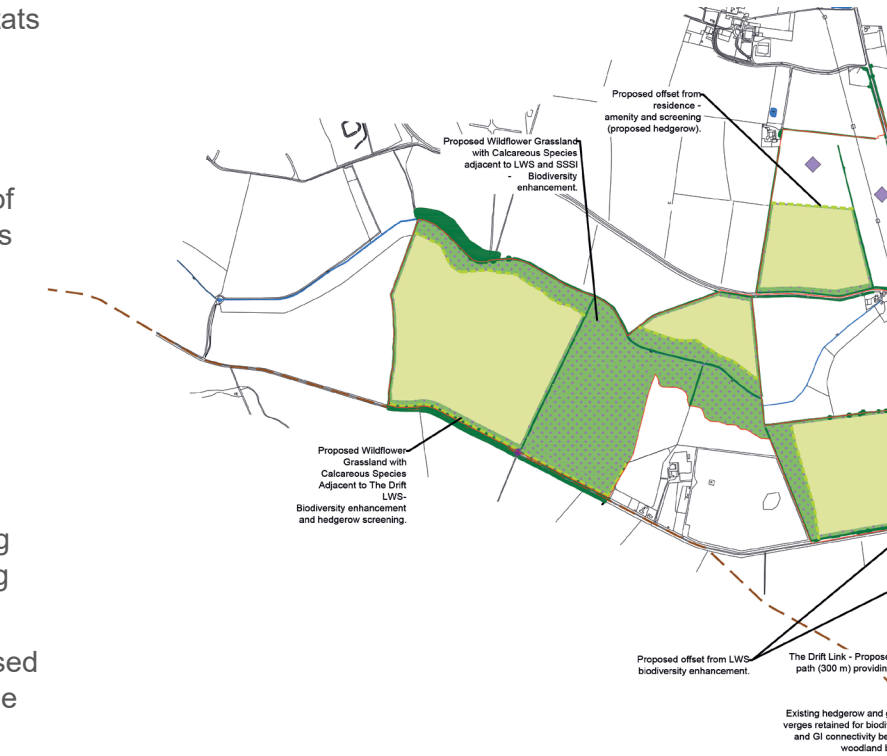


Nature area on the West Glen River adjacent to the Order

6.0 Green Infrastructure Strategy

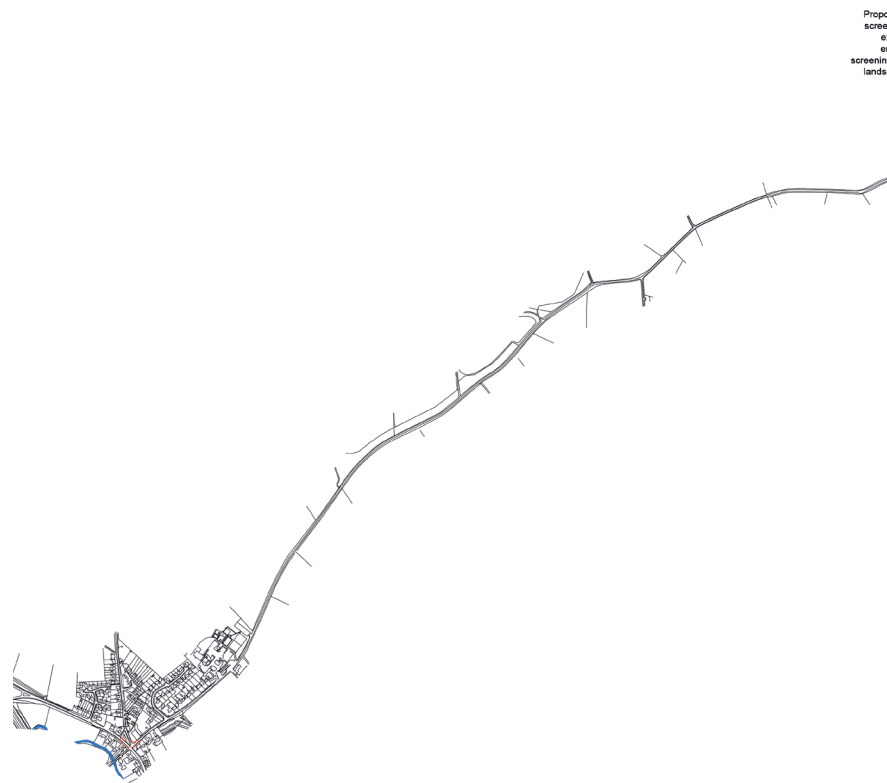
- 6.1 The Green Infrastructure (GI) strategy for the Proposed Development has been prepared to consider opportunities for connecting habitats within that would deliver environmental and/or biodiversity net gain and consider other community enhancements and is secured through the **oLEMP**.
- 6.2 The GI Strategy and design of the Proposed Development has been underpinned by an understanding of the environmental characteristics of the Order limits and its context, including geology, hydrology, biodiversity and landscape character. The GI Strategy seeks to build on these and contribute positively to them as part of a landscape scale nature recovery network. Key principles of the GI Strategy include:
- The use of Mitigation and Enhancement areas for retention of arable agricultural production with the creation of skylark nesting plots creating new habitat on intensively managed land to increase habitat diversity.
 - The use of Mitigation and Enhancement areas where underlain by chalk geology (principally in the west of the Order limits) for the creation of wildflower grassland with calcareous species reflective of the underlying geology, respect the distinctive and unique character of the countryside. The creation of this valuable habitat makes a positive contribution to Lincolnshire Biodiversity Action Plan (BAP) aspirations and connects designated ecological sites, improving the GI network.
 - The recognition of the West Glen River, informed by ecological and landscape studies detailed in Section 3 as a key structuring GI component of the Proposed Development and its use as a Mitigation and Enhancement area founded on its riparian environment. The GI strategy seeks to connect two ecological diverse sites by creating new habitat on intensively managed land, increase habitat diversity and buffering the West Glen River, enabling greater connectivity and sustainable access. Discussions with Anglian Water regarding their proposed ecological works to the West Glen River have been undertaken as part of the consultation process and emerging designs produced by Anglian Water align and complement the GI Strategy.
 - The removal of the Solar PV Site from the vicinity of settlements and dwellings based on analysis within **Chapter 6: Landscape and Visual** and **Appendix 6.5** of the ES using a bespoke design response reflective of the distinctive and historic value of the countryside such as the reinstatement of historic field boundaries.
 - The retention of existing vegetation within the Order limits wherever possible with the Proposed Development set back from these and the utilisation of existing field gateways, tracks and ditch crossings to avoid the removal of vegetation wherever possible reflecting the existing distinctive vegetative network of the area.
 - The planting of new tree belts, hedgerow trees and hedgerows reflective of the characteristics of the Rutland Plateaux D(ii) Clay Woodlands LCA and the Kesteven Uplands LCA, contributing positively to management guidelines set out for them as detailed in Section 3.

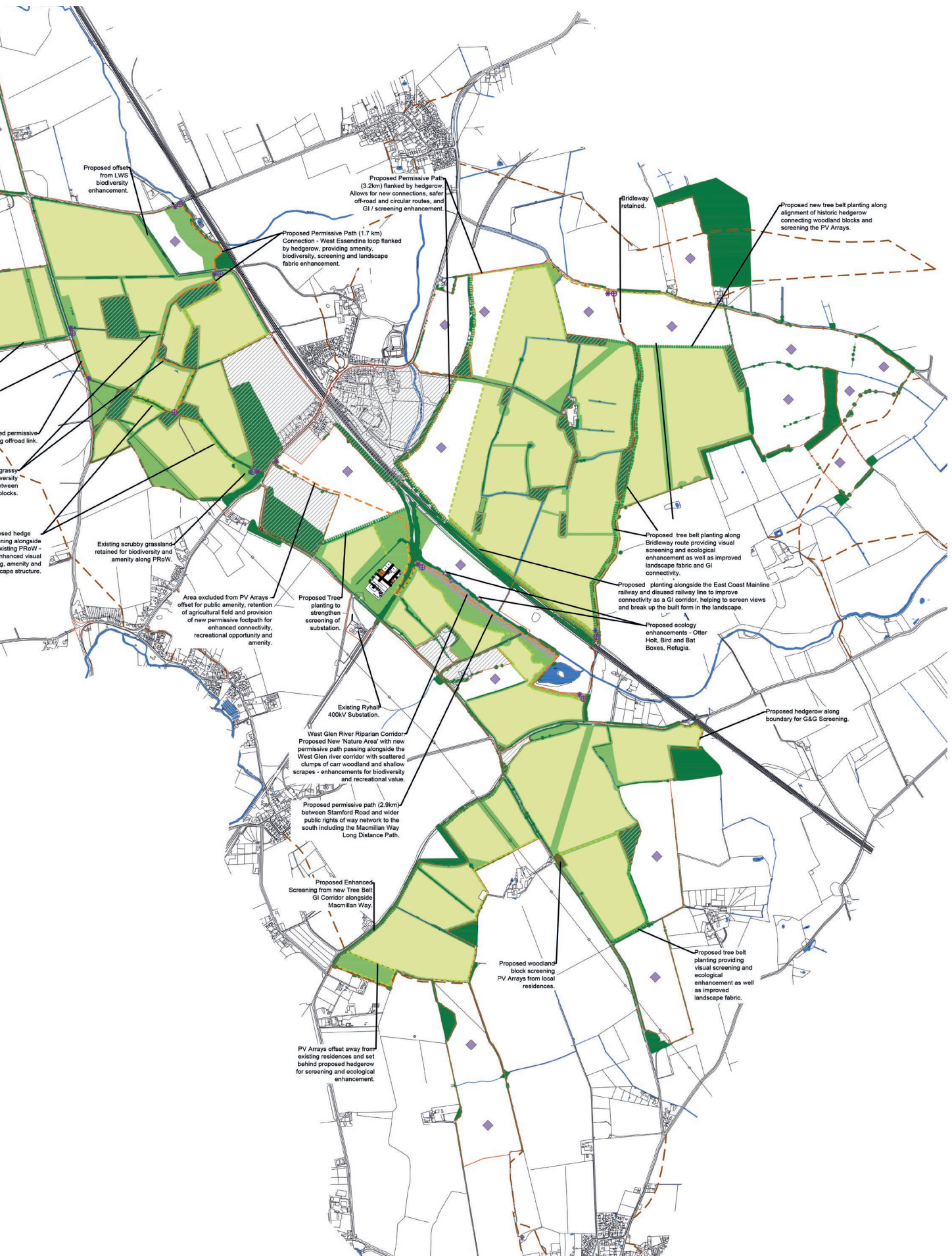
- The reconnection of existing habitats and designated ecological sites through new woodland, grassland and hedgerows planting that is reflective of local soil conditions and existing species and as part of landscape scale GI enhancements and facilitating a network of permeable 'wildlife corridors' throughout the Order limits.
- The retention of all existing PRow within the Order limits in their existing alignment and their buffering with a minimum 15m either side offset with new planting as strategic GI corridors, providing multifunctional spaces.
- The removal of fields fully comprised of Grade 2 Best and Most Versatile (BMV) land and their use as Mitigation and Enhancement areas.



LEGEND

| | |
|--------------------------------------|--|
| | Order limits |
| | Area outside of Order limits |
| Existing Features | |
| | Existing Water Course / Drain |
| | Existing Waterbody |
| | Public Right of Way |
| | Retained Arable Field Parcel with Skylark Plots |
| | Existing Woodland, Trees and Hedgerows |
| | Existing Trees and Hedgerows removed to allow for construction of Proposed Development |
| Proposed Development Features | |
| | Proposed Tussock Grassland with Wildflowers |
| | Proposed Wildflower Grassland with Calcareous Species |
| | Proposed Grazed Grassland (Within Fenced PV Arrays) |
| | Proposed Screening / Structure Planting Woodland Copse |
| | Proposed Scattered Wet Woodland Planting |
| | Proposed Screening / Structure Planting Tree Belt |
| | Proposed Screening / Structure Planting Hedgerows |
| | Proposed Permissive Footpath |
| | Proposed Feature : Interpretation Board |
| | Proposed Feature : Wayfinder |
| | Proposed Feature : Bench seating and Hide |
| | Proposed Feature : Protected Species Structure |





The background of the infographic is a photograph of a solar farm. Rows of solar panels stretch across the middle ground, receding into the distance under a clear blue sky. In the foreground, there is a field of tall green grass with several yellow wildflowers in bloom. Overlaid on this image are five circular callouts, each containing a specific environmental metric. The callouts are in various shades of teal and blue, except for one which is white with a faint floral pattern.

112ha

of new tussocky
grassland with
wildflowers

13.9km

of new
hedgerow
planting

3.7ha

of wet
woodland planting

7.5km

of new treebelt
planting

43ha

of wildflower grassland with
calcareous species



239ha
of retained arable
farmland

8.1km
of new
permissive
paths

419ha
of grazed grassland
beneath the
Solar Arrays

6.3 The combination of measures identified in the Green Infrastructure Strategy results in the Proposed Development delivering a Biodiversity Net Gain of 72% for Habitats, 40% for Hedgerows against the Department for Agricultural and Rural Affairs (DEFRA) Biodiversity Metric 3.1. Further information on the BNG Assessment can be found in **Appendix 7.6** of the ES.

6.4 As well as retaining all existing Public Rights of Way (PRoW) across the Order limits, 8.1km of new permissive routes have been incorporated into the Proposed Development as illustrated on the Green Infrastructure Strategy. These permissive routes will enable increased public access across the landscape of the local area and include:

- Essendine Western Loop – A circa 1.7km permissive path route creating a loop running northwest of Essendine linking back to the existing bridleway E169 and Carlby High Street and taking in the West Glen River to the north of Essendine.
- West Glen River – A circa 2.9km permissive path link from Stamford Road south-eastward along the river corridor to join MacMillan Way. The route would include low a key nature area, interpretation and seating.
- Essendine Eastern Loop – a circa 3.2km permissive path route linking Essendine to the northern and southern ends of Bridleway E182 (BrAW/1/1).
- The Drift Link – a circa 300m link from existing bridleway E169 running north parallel to the B1176 providing an offroad link to the Drift.



Solar arrays.

7.0 The detailed design process

- 7.1 It is important to note that the exact design details of the Proposed Development cannot be confirmed at this stage. This DAS provides a framework and guidance for the detailed design. Should consent be granted, detailed design will need to be approved by the local planning authority in accordance with the Design Guidance set out within this DAS and other documentation submitted as part of the DCO such as the **Works Plans**, **Parameter Plans** and **oLEMP**.



Solar arrays.

8.0 Conclusions

- 8.1 The approach to design of the Proposed Development has adopted a clear hierarchy, based on those set out within NIC documentation. From these, the project has adopted its own Project Principles and Design Guidance to deliver good design outcomes. These have evolved throughout the DCO application process being informed and refined by consultation feedback and technical studies. The Project Principles have directly steered and influenced the design of the Proposed Development, in response to consultation feedback and technical studies and have led to the development of Design Guidance which will inform detailed design.
- 8.2 The design approach has sought to avoid and reduce adverse impacts wherever possible but equally as important it has sought to realise and make the most of opportunities for enhancement whilst balancing flexibility and certainty within the DCO application.
- 8.3 In addition to the generation of secure, low cost, decarbonised clean, renewable energy, the Proposed Development would deliver a number of environmental, social and economic benefits. These include significant areas of new habitats that respect and enhance features within the landscape, including riparian, wildflower with calcareous species grassland and hedgerows delivering a significant biodiversity net gain, improvements in ecological connectivity as well as recreational routes through the provision of 8.1km of new permissive paths.



Solar arrays.

9.0 References

- Ref.1** Department for Energy and Climate Change (2011): Overarching National Policy Statement for Energy (EN-1).
- Ref. 2** UK Government, The Planning Act 2008.
- Ref. 3** Department for Business, Energy and Industrial Strategy (2021): Overarching National Policy Statement for Energy (Draft EN1).
- Ref. 4** Department for Energy and Climate Change (2011): Overarching National Policy Statement for Renewable Energy Infrastructure (EN-3).
- Ref. 5** Department for Business, Energy and Industrial Strategy (2021): National Policy Statement for Energy (Draft EN3).
- Ref. 6** National Infrastructure Commission (undated): Design Principles for National Infrastructure.
- Ref. 7** Rutland County Council (2003) Rutland Landscape Character Assessment.
- Ref. 8** South Kesteven District Council (2007) South Kesteven Landscape Character Assessment.
- Ref. 9** Natural England (2009) Technical Information Note (TIM 049): Agricultural Land Classification: Protecting the Best and Most Versatile Agricultural Land.
- Ref. 10** Rutland County Council (2011) Rutland Core Strategy.
- Ref. 11** Leicestershire County Council and Rutland County Council (2016) Leicestershire and Rutland Biodiversity Action Plan 2016 -2026.
- Ref. 12** South Kesteven District Council (2020) South Kesteven Local Plan.
- Ref. 13** South Kesteven District Council (undated) South Kesteven Green Infrastructure Strategy.
- Ref. 14** Rutland and South Kesteven (2011) Design Guidance for Rutland and South Kesteven and Design Guidelines for Rutland (2022).
- Ref. 15** Lincolnshire County Council (2020) Lincolnshire County Council's Green Masterplan 2020 - 2025.



Mallard Pass

Solar Farm