BOSTON

LINCOLNSHIRE

DESIGN STATEMENT





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ABOUT US

We believe great design creates places that work well for all and where people want to live, work and enjoy themselves. Our approach combines a deep understanding of context with sustainable design and creativity at its heart.

"What motivates us every day is a commitment to achieving strong architecture and urban design solutions that work for all; helping deliver sustainable living, renewable energy, and inclusive places."

Tom Gray, Director

01 THE SITE

Site Description

The development site is located approximately 2.4 miles (3.9 kilometres) to the north of Holbeach, Lincolnshire. The site comprises of a irregularly shaped piece of land, generally following the boundaries of existing field drains to the east. To the north and south, the boundary follows the line of existing field drains, with Middle Marsh Road forming the western boundary. The exception to this is where the western boundary excludes a farm, associated buldings and land, along Middle Marsh Road. The setting is predominantly rural, however a small group of houses sit to the west of the site clustered around the farm, with the village of Holbeach Bank to the south west of the site, forming a ribbon development of housing along Roman Bank.

The total site area covers approximately 80 hectares of land, currently used as arable farmland.

The Distribution Network Operator's power lines cross the site east to west although there is a need to identify the most efficient connection point to allow power to be exported to the network with minimal additional infrastructure. On-site facilities can be kept to a minimum, and development of the site can be focused on landscape improvements, habitat creation and biodiversity.

The Proposal

This site to the north of Holbeach offers a sustainable opportunity to provide renewable energy for the local area and the wider grid, given its location, proximity to existing infrastructure and accessibility.

Successful and strategic landscape design will effectively integrate the proposed solar array within the existing landscape and create its own habitat and biodiversity benefits



Fig 1. Site Location

Site Area

80 Hectares
197.68 Acres

Key Features

Flat, arable farmland with open boundaries
A few small tree groups located within the surrounding area



Fig 2. View looking east across the site from Middle Marsh Road



Fig 3. Looking north into the site adjacent an existing access track from Roman Bank



Fig 4. View looking north east adjacent an existing access from Middle Marsh Lane



Fig 5. Wider Context Plan

KEY:

- Site Boundary
- Public Highway
- Watercourse / Field Drain
- Strategic Cycle Route

Context and Visual Assessment

The site and wider area are comprised of flat, open and exposed arable agricultural land. Located within "The Fens" National Character Area (NCA46) fields adjacent follow the characteristics of expansive, flat, open, low-lying wetland areas and are devoid of boundary vegetation, with some only demarcated by small field drainage ditches. Field boundaries on the site are stronger towards the north, south and west, with large drainage ditches and highways defining field boundaries.

Woodland cover is sparse, notably a few small woodland blocks, occasional avenues alongside roads, isolated field trees and shelterbelts.

The viewpoints selected for further consideration through the production of photomontage views are listed below. Please note that the complete list of viewpoints considered as part of this application are listed within AAH Landscape Consultant's accompanying Landscape Visual Impact Assessment.

- VP01 - Roman Bank, Looking North
- VP01A - Middle Marsh Road, Looking North-East
- VP02 - Middle Marsh Road, Looking East
- VP02A - Middle Marsh Road, Looking East
- VP03 - Middle Marsh Road, Looking East
- VP04 - Lincoln Lane, Looking South
- VP05 - St Mark's Road, Looking South
- VP06 - near St Mark's Rd, Looking South-West
- VP07 - Eastern Road, Looking West
- VP08 - Eastern Road, Looking West

As part of the assessment of the impact of development on views from these locations, a number of photomontages have been produced to an appropriate AVR level to demonstrate the likely impact that the development will have, and how landscape mitigation measures incorporated into the design will minimise any adverse impacts.



Fig 6. View looking east across the site from VP02



Fig 7. Looking south east across the site from VP03



Fig 8. View looking south towards the site from VP04

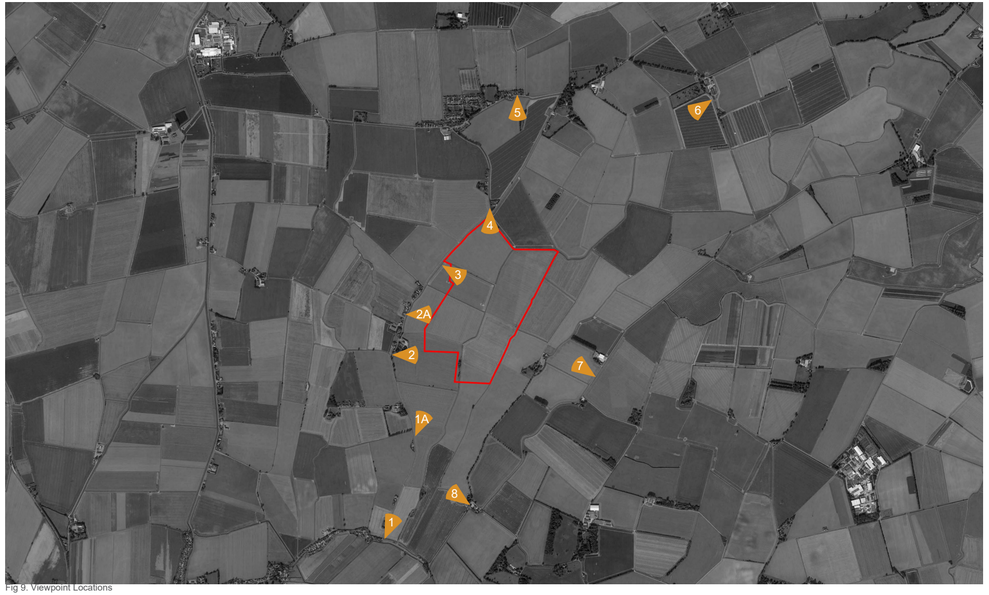


Fig 9. Viewpoint Locations

Access

A preliminary access appraisal undertaken by highway consultants identified a number of potential access points into the site dependant on the chosen arrangement of PV solar arrays. A primary access has been selected to the northern portion of the site, due to the expected need for infrastructure in this location to connect the array to the grid.

Additional access points to the south utilise an existing farm track that also serves two residential properties and a small collection of farm buildings in the southern portion of the site. Depending on the arrangement of panels, these access points may not be required to serve the development; however, they can remain to retain access to the existing properties if required.

Landscape

The landscape features in this part of Lincolnshire are sparse, with the exception of built up areas where trees and hedgerows, alongside buildings, provide a stronger sense of enclosure. Expansive views across the flat landscape are terminated by distant views of trees and hedgerows, punctuated by pylons, large individual trees, and the occasional farm building or groups of structures. Solar panels on the site will not extend beyond 3m in height, so can be easily obscured by hedgerows or small trees. Existing tree groups will be retained across the whole site. Further planting can be added in similar groups to mitigate the visual impact of the solar arrays, and contribute to the identity of the surrounding landscape.

Layout

The PV solar arrays can be arranged in open areas that sit between existing field boundaries, to minimise impact on landscape features and maintain the existing landscape character where possible. Set backs from these features allow for further planting, while also ensuring that the panels themselves are not subject to excessive amounts of shading that would impact the operational efficiency of the installation.

Equipment required to operate and maintain the solar pv installation will be located in discrete positions where possible, close to existing infrastructure to minimise any impacts. The positioning of equipment is also carefully considered to minimise impact on landscape features.



Fig 10. Example of PV solar panels set within an agricultural field



Fig 11. Exampe of existng tree belt retained along site boundary



Fig 12. Example of solar arrays set within a mature landscape setting



Fig 13. Example of PV solar panels installed adjacent an area retained for food cultivation



Fig 14. Constraints Plan



Fig 15. Opportunities Plan

KEY:

- Site Boundary
- Existing Buildings
- Potential Site Access
- Additional Site Access
- Existing/Retained Trees
- Existing/Retained Hedgerows
- Overhead Powerlines
- Field Drain
- Street / Highway Connection
- Underground Pipeline
- Flood Zone 2
- Flood Zone 3
- Potential Electricity Sub-station
- Indicative Landscape / PV Array Areas
- ProposedTrees
- Proposed Hedgerows

Pre-application Design Options

To explore the development potential of the site, 2 design options were developed to accommodate the required power output on the site, while working positively with the constraints and opportunities identified.

In both options, the proposed primary access is taken from Middle Marsh Lane, where an existing farm access and track are located. This gives direct access to the solar array and to on site infrastructure required to connect to the grid.

Site structures would be located together, adjacent the base of an existing pylon that carries electricity cables across the site. This would ensure minimal distance between the arrays and grid connection, while also locating structures in a single location, away from the site's boundaries.

For Design Option 1, arrays will be located within existing fields to the north of the site. This will allow the existing fields to the southern portion of the site to be left untouched, retaining key views across the site for the existing properties situated on Middle Marsh Road and located on the site itself.

For Design Option 2, the solar array is extended across the southern portion of the site, leaving a large area to the north untouched and left open. This allows the panels to sit closer to existing housing and small settlements that are situated to the south and west of the site.

In both options, hedgerows and trees which form the boundaries to the site will be protected and reinforced with native species. Some boundaries may be left exposed, to retain the existing landscape character. For example, in option 1, the southern portion of the site can be left open, with screen planting used only to the northern portion of the site where the solar arrays are located. Areas of orchard planing are proposed alongside Middle Marsh Lane, in both options, close to existing housing.

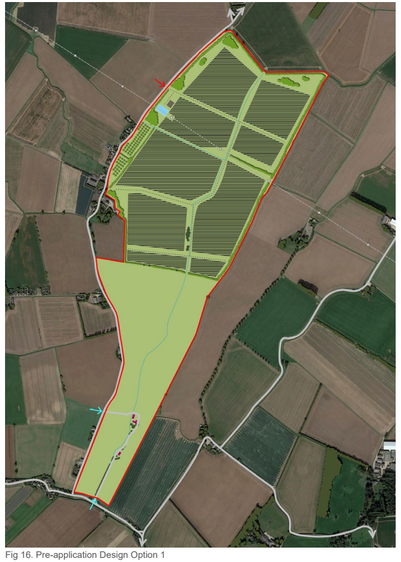


Fig 16. Pre-application Design Option 1



Fig 17. Pre-application Design Option 2

Scoping Layout Drawing

An initial scoping layout drawing was generated by solar engineers to ensure that the required extent of pv solar panels and associated equipment could be accommodated on site considering the site's constraints and opportunities as identified. A design was developed that would produce the required 48MW power output, distribute this via an onsite DNO sub-station adjacent existing grid powerlines.

This design option was selected due to technical benefits and minimising the overall land take and subsequent visual impact of the PV arrays.

The proposal is for a temporary development to cover the operational life of the solar farm. At the end of the solar array's operational lifetime (or end of the duration of a planning permission if shorter), all equipment associated with the Solar Installation will be removed and the land restored to agricultural use. Solar PV panels are currently manufactured with performance warranties of 30 years plus – this guarantees the performance of the panels to a certain minimum level at year 30 of operation and beyond where the panels will continue to operate economically and efficiently.

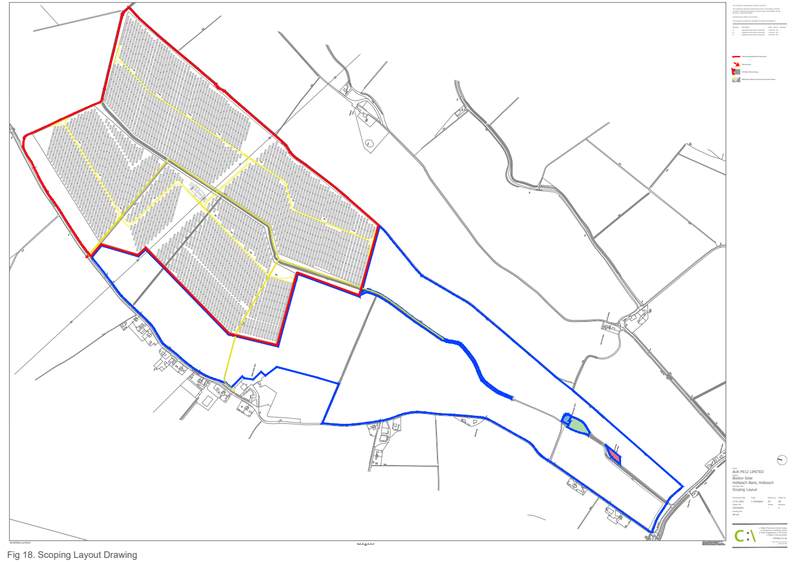


Fig 18. Scoping Layout Drawing

03 PROPOSAL

The access point from Middle Marsh Road identified at pre-application stage, is considered as the most appropriate access point into the site. This allows realtively straightforward access into the solar arrays for maintenance and also to the proposed DNO sub-station and other required strucutres located adjacent to the existing overhead electricity cables that cross the northern portion of the site.

Site structures are to be located in a small compound adjacent an existing pylon within the site to minimise visual impact. This provides opportunity for the output from the solar arrays to be taken from this point and fed into the existing power lines, avoiding the disruption of installing additional cables. Existing agricultural lands are to be retained, along with all field boundaries, drainage ditches and vegetation to protect the landscape character of the site.

Existing trees and hedgerows are to be retained. Significant areas of buffer planting are proposed to screen exposed areas and reduce the visual impact from the solar arrays, in particular from long distance views. However, due to the panels and associated structures being no greater than 3m in height, this planting can be kept to a low level, where required, to maintain the open landscape character.

Approximately 65.5 hectares of solar panel coverage will provide 48MW of power to the grid. The panels are positioned to maximise solar gain, located within the northern portion of the site, set away from existing properties towards the south of the site. Further planting and areas of wildflower meadow can enhance existing field boundaries and provide additional areas of biodiversity within the site. The proposal has been designed to retain agricultural use, with large areas to the south remaining undeveloped, allowing arable farming and food cultivation to continue alongside solar power generation.

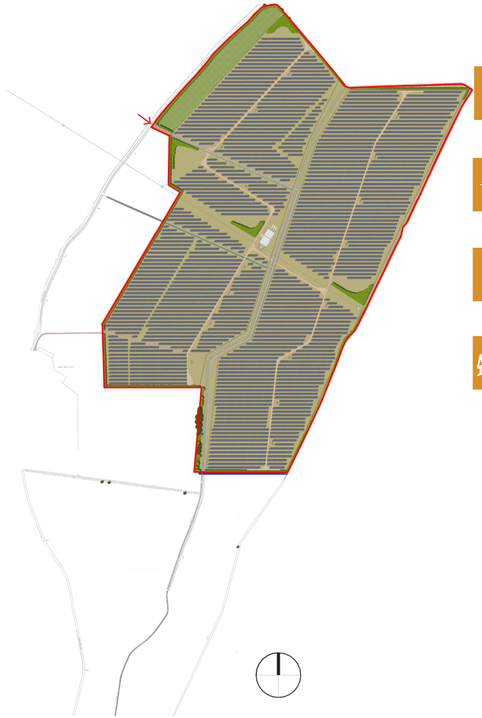


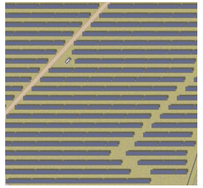
Fig 19. Proposed Site Layout

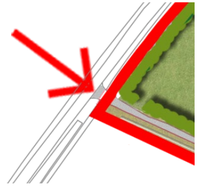
Site Area
80 Ha

Generation Capacity
48MW

Grid Connection
On site via proposed sub-station

Landscape
New native trees & hedgerow planting

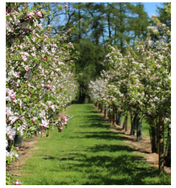


















Solar PV Installation

The Solar Installation will be comprised of the following components, illustrated in the accompanying Proposed Site Layout and Typical Elevation Plans. The specifications for each component have been carefully assessed with the aim of responding appropriately to site conditions, minimising heights and overall footprints whilst still achieving efficient energy generation.

The proposed Solar Installation, as shown on the accompanying drawings, would consist of:

• Solar PV Panels arranged on a simple metal framework facing south to form tables ("arrays"); (a)

• String inverters situated beneath the panels; (b)

• Switchgear Substations; (c)

• Transformers (d) and AC boxes (e), adjacent to the Switchgear Substations around the site;

• A DNO Substation; (f)

• A Storage Container; (g)

• A Monitoring House, together with an associated weather station and communications equipment; (h)

• A combined welfare, site office and comms building; (i)

• Security fencing around the site perimeter is to form a secure 'deer style' fencing. Gates are included in the fencing for access to the site and to the field margins for maintenance access within each field; (j)

• Internal access track within the site; (k)

• CCTV and site security systems; (l)

• The application also includes associated works required in ground preparation, the construction of building foundations etc.

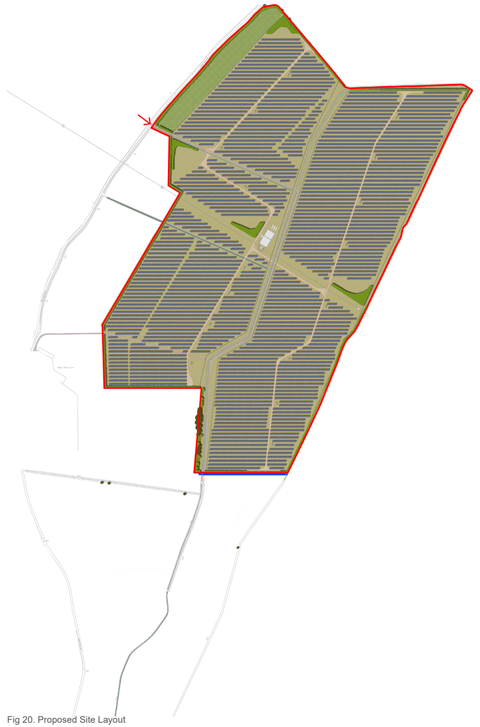
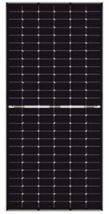


Fig 20. Proposed Site Layout


a


b


c d

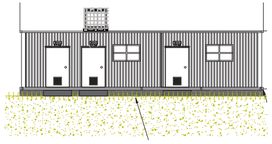

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