March 2022



## FULL PLANNING APPLICATION FOR THE CONSTRUCTION OF A SOLAR FARM TOGETHER WITH ALL ASSOCIATED WORKS, EQUIPMENT AND NECESSARY INFRASTRUCTURE

#### SITE SELECTION REPORT

### BELVOIR SOLAR FARM, LAND WITHIN THE BELVOIR ESTATE, GRANTHAM, NG32 1PE

ON BEHALF OF JBM SOLAR PROJECTS 10 LTD.

#### Pegasus Group

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#### 1. INTRODUCTION

- 1.1 This Site Selection Report has been prepared by Pegasus Group on behalf of JBM Solar Projects 10 Ltd ("The Applicant") to support a planning application for a Solar Farm together with associated equipment and infrastructure on land within the Belvoir Estate, Grantham, NG32 1PE ("The Application Site").
- 1.2 This document summarises the process undertaken by the Applicant to select the Site for the Proposed Development.

#### **Structure of Report**

- 1.3 This Report confirms the fundamental requirements and circumstances which need to be in place for a solar farm to be provided in order to determine a 'Site Search Area' and the detailed considerations undertaken to find suitable land within these identified areas.
- 1.4 The Report summarises the considerations which demonstrate the proposed Application Site is the most preferable site to accommodate the Proposed Development when compared to other possible locations applying the site search methodology.



#### 2. SOLAR FARM REQUIREMENTS

#### **Fundamental Requirements for Grid Connection**

2.1 The matters set out in this Section are those which are fundamental for a solar farm to be accommodated. These overarching parameters define the Site Search Area for which the detailed site analysis will take place.

#### Capacity of Electricity Network and Ability to Connect

- 2.2 The solar farm needs to be capable of connecting to the Electricity Network at a location where there is existing capacity.
- 2.3 Further, the Applicant is required to have secured a connection agreement from the District Network Operator (DNO) to export electricity at that location.

#### Viable Connection

- 2.4 A scheme of this scale is required to connect into a 132kV High Voltage (HV) line in order to export electricity. The cost of a 132kV cable to connect back to the Point of Connection (POC) to the Electricity Network is c.£1million per kilometre. As such, the substation allowing connection to the Electricity Network cannot be more than 1km from the point of connection, as any further distance would incur excessive connection costs and make the scheme unviable.
- 2.5 The Applicant therefore considers land within 1km of locations at which there is sufficient capacity on the Electricity Network and to which they have legal right to export electricity.

#### **Identification of the Site Search Area**

- 2.6 In order to undertake the site selection process, it is necessary to define an appropriate and reasonable area in which to perform a detailed consideration of sites (the "Site Search Area"). However, there is no national or local guidance regarding the definition of a suitable area for this analysis.
- 2.7 The full extent of the 132kV HV line which has capacity for export of additional electricity was identified and extended to 1km either side of the HV line, which is a requirement for a viable grid connection, as noted above. The extent of the 132kV HV line when applying this 1km zone is shown on the Plan attached at



Appendix 1. Land within this identified area lies within the Melton District, South Kesteven District, Rushcliffe District and the Newark and Sherwood District.

#### **APPENDIX 1: SITE SEARCH AREA**

- 2.8 The Site Search Area extends to approximately 30km in length, and includes several areas within the northern portion within Rushcliffe District and the Newark and Sherwood District which are constrained by environmental designations (including flood risk and historic designations). The Applicant approached the remaining potentially suitable landowners with landholdings of 50 acres or more within the Site Search Area, however, these landowners were not willing to enter into an agreement to promote their land for a solar farm.
- 2.9 Based on these considerations, the southern central c.15km section of the 132kV HV line was considered a reasonable extent to undertake a more detailed search. Land within this range, which is also within 1km of the line, forms the Site Search Area. The Applicant has used the c.15km Site Search Area to focus on potential sites and more detailed analysis.



#### 3. SITE IDENTIFICATION CRITERIA

3.1 In order to identify potential locations for the solar farm within the Site Search Area, the matters outlined below are considered.

#### **Environmental and Planning Constraints**

- 3.2 The Applicant considers the presence of designations and constraints which would mean the principle of a solar farm would unlikely be acceptable or be less preferable than in other locations. Such designations include:
  - Planning designations, including Green Belt land;
  - Landscape designations, including Areas of Outstanding Natural Beauty;
  - Ecological designations, including SACs, SPAs, SSSIs and Local Nature Reserves;
  - Heritage designations, including Scheduled Monuments, Listed Buildings,
     Conservation Areas and Ancient Woodland;
  - Environment Agency defined Flood Zone 2 and 3 land.

#### Achieving a Viable Scale and Land Ownership

- 3.3 The UK Government's Renewables Obligation Certificate scheme to subsidise solar photovoltaic (PV) development ended in April 2017. In the absence of subsidy, the scale of solar farms is required to be larger in capacity in order to achieve a viable scheme and to achieve economies of scale.
- 3.4 Subsidy-free projects take a considerable amount of extra time to pay back the initial capital investment required to develop and construct a solar farm. As a result the vast majority of subsidy free solar schemes brought forward in 2020 and 2021 were seeking 40 year planning permissions as opposed to the old Feedin-Tariff or ROCs projects which were generally 25 year projects.
- 3.5 Not only is a longer operational period required, but the scale of the projects needs to be larger in order to achieve the economies of scale, which enables investors to take the development risk in the first place. These larger schemes cannot connect into Low Voltage (LV) or Medium Voltage (MV) lines or LV/MV substations as they do not have the capacity to carry the electricity that would be produced from the solar farm. As a result these larger schemes need to connect



into a High Voltage (HV) 132kV line or a 132kV substation. This connection into the HV network is considerably more expensive than a Low Voltage (LV) or Medium Voltage (MV) connection and an average HV grid connection cost is in the millions of pounds. A sub-optimal amount of acreage on a larger scheme will result in a significant increase in the grid connection cost per megawatt (MW), which undermines the viability of any given scheme.

- 3.6 For the reasons outlined above the Applicant requires sufficient land to accommodate a solar PV development with a capacity of 49.9MW in order to achieve viability. The land requirements vary depending on various matters, but a significant area of land is required to maximise efficiency and yield of the solar farm to maximise renewable energy benefits.
- 3.7 In order to find land of sufficient size to accommodate the required capacity, the Applicant focuses on large landholdings within the Site Search Area to limit the potential number of landowners required to deliver a viable-scale solar farm scheme.
- 3.8 Landholdings of 50 acres or more within the Site Search Area are therefore identified.

#### Availability of Non-Agricultural Land / Previously Developed Land

- 3.9 In recognition of National Planning Practice Guidance relating to large-scale solar PV, land which is not in agricultural use and/or previously developed is prioritised.
- 3.10 The Natural England Provisional Agricultural Land Classification (ALC) Map identifies land, which is non-agricultural, supported by analysis of aerial photography.
- 3.11 The relevant Brownfield Land Registers are consulted for details of potentially available previously developed land within the Site Search Area.
- 3.12 Deployment on rooftops is not considered feasible or viable at this proposed scale.

#### Agricultural Land Quality

3.13 In circumstances where no non-agricultural or previously developed land is identified in the Site Search Area, and use of agricultural land is therefore



- necessary, consideration is given to the Natural England Provisional ALC Maps to consider the agricultural land quality.
- 3.14 The ALC maps define agricultural land quality as being Grades 1-5 (1 being 'Excellent' and 5 'Very Poor'). Note that the mapping does not distinguish between Grade 3a 'Good' and Grade 3b 'Moderate' agricultural land.
- 3.15 Preference is given to the use of poorer quality agricultural land over higher quality land.



#### 4. SITE SELECTION CONSIDERATIONS

#### **Site Search Area**

- 4.1 The Applicant defined the Site Search Area, the process for which is set out in Section 2, this area is shown at Appendix 1.
- 4.2 This has been defined in the context of the fundamental requirements relevant to identifying a potential location for a solar farm (Electricity Network capacity, export offer and viable connection) and refined to the southern central extent of the 132kV HV line with capacity. To avoid the Site Search Area being too limited, the Applicant determined in this instance that this search area should comprise the section of the 132kV HV line from its northern extent at Staythorpe to southern extent at Grantham.

#### **Site Identification**

4.3 Relevant considerations which informed the site identification within the defined Site Search Area are set out below.

#### **Environmental and Planning Constraints**

4.4 The relevant designations and constraints within the Site Search Area are shown on the plan attached at Appendix 2.

#### APPENDIX 2: SITE SEARCH AREA CONSTRAINTS AND LANDHOLDINGS

- 4.5 A number of areas within the Site Search Area, primarily to the north-west of the proposed Application Site are located within Environment Agency Flood Zones 2 and 3 and are therefore deemed as being at risk of flooding. The NPPF advises that development outside of such areas is sequentially preferable.
- 4.6 Several heritage assets are present across the Site Search Area, a minimum 200m buffer has been applied surrounding these assets to inform the site identification process. This includes Grade II listed buildings, Scheduled Monuments and an area identified on the plan as 'Heritage Assets at Risk (HAR) Register' land. The land identified as HAR Register land is associated with Harlaxton Manor Registered Park and Garden (List ID: 1000982), located southwest of Grantham, and also includes an area of Ancient Woodland.



#### Site Access

- 4.7 The construction and decommissioning phases of the development require access by HGVs to the site to transport solar panels and supporting equipment. It is necessary for any land to be accessible from the highway network from roads capable of accommodating such vehicles.
- 4.8 The Plan at Appendix 3 shows the network of 'A' and 'B' roads within the Site Search Area. These roads are identified as being of suitable scale to accommodate construction and decommissioning vehicles.

#### **APPENDIX 3: SITE SEARCH AREA ROAD NETWORK**

4.9 These roads are identified as being of suitable scale to accommodate construction and decommissioning vehicles and, therefore, focus is given to land in proximity to them. The following roads are positioned within the Site Search Area: A617, A46, A52, A607, A1, B1174 as well as Springfield Road located within the urban area of Grantham.

#### Land Ownership

- 4.10 Landholdings of more than 50 acres are shown in the plan at Appendix 2. This forms the basis of approaching landowners to determine if they would be interested in their land being used for a solar farm development. Only land where the owner is interested in the proposed development is considered available to accommodate a solar farm.
- 4.11 The proposed Application Site as well as land adjacent to the proposed redline form landholdings with more than 50 acres. Additional landholdings with more than 50 acres within the Site Search Area are discussed in detail below:
  - To the south of Newark-on-Trent, within the northern section of the Site Search Area, part of the landholdings identified with more than 50 acres was previously progressed with an application for solar farm development (Newark and Sherwood District Council Reference: 19/01408/FULM). This application has subsequently been permitted in November 2019 subject to conditions.
  - To the east of Aslockton and south of Orston, within the northern section of the Site Search Area, there is a single landholding with more than 50



acres. However, this site lies partially within Flood Zones 2 and 3, and access to the site could only be acquired through adjacent privately owned land. The adjacent land to this Site does benefit from planning permission for a 10MW solar farm development (Rushcliffe Borough Council Reference: 14/01739/FUL), approved in February 2015 and now constructed. It is noted that these solar arrays are only located within the field closest to Station Road which would benefit from suitable access arrangements.

 The Applicant approached the remaining potentially suitable landowners with landholdings of 50 acres or more within the Site Search Area, however, these landowners were not willing to enter into an agreement to promote their land for a solar farm.

Non-Agricultural Land / Previously Developed Land and Agricultural Land Quality

4.12 Attached at Appendix 4 is a plan with the Natural England Provisional ALC Mapping shown within the Site Search Area.

#### **APPENDIX 4: SITE SEARCH AREA ALC MAPPING**

- 4.13 This demonstrates that there is a corridor of land in the locality of Grantham identified as urban land within the Site Search Area, however, there are no landholdings identified with more than 50 acres located within this urban area.
- 4.14 A review of the Melton Borough Council Brownfield Land Register has been undertaken. All of the sites on the Melton Borough Council Brownfield Land Register are below 10 hectares (ha) (c.25 acres), with the majority below 3ha, and are therefore not suitable for the scale of the Proposed Development. It also indicates that there is no land available on the Melton Borough Council Brownfield Land Register within the Site Search Area.
- 4.15 The southernmost part of the Site Search Area lies within South Kesteven District. A review of the South Kesteven District Council Brownfield Land Register has been undertaken. All of the sites on the South Kesteven District Council Brownfield Land Register are below 7ha and are therefore not suitable for the scale of the Proposed Development.
- 4.16 A review of the Rushcliffe Borough Council Brownfield Land Register has also been undertaken as the Site Search Area is located along the Local Authority's north-



eastern boundary. The majority of the sites on the Rushcliffe Borough Council Brownfield Land Register are below 3ha and are therefore not suitable for the scale of the Proposed development. One brownfield site is identified as 35.4ha located at Former RAF Newton, Newton (site reference: SHLAA/NEW/002), however, this is located just outside of the Site Search Area, west of the 132kV line. Within the Rushcliffe Borough Council Local Plan Part 1: Core Strategy (adopted December 2014) the Former RAF Newton is allocated (Policy 22) for residential development and has been identified suitable for 550 dwellings as well as employment land. Subsequently, an outline planning application has been approved in January 2014 (Rushcliffe Borough Council Reference: 10/02105/OUT) for 500 dwellings, employment as well as ancillary and community uses. Given this planning context, this brownfield site is not considered suitable for the Proposed Development.

- 4.17 The northernmost part of the Site Search Area lies within Newark and Sherwood District. A review of the Newark and Sherwood District Council Brownfield Land Register has been undertaken. All of the sites on the Newark and Sherwood District Council Brownfield Land Register are below 13ha, with the majority below 3ha, and are therefore not suitable for the scale of the Proposed development.
- 4.18 The agricultural land quality within the Site Search Area predominantly comprises undifferentiated Grade 3 quality land, with some areas of Urban land, Grade 2 and Grade 1 land. There is no land defined as being Grade 4 or Grade 5 / Non-Agricultural land within 1km of the 132kV line with the secured connection to the Electricity Network.
- 4.19 Given use of agricultural land is necessary, the focus of the site search was on Grade 3 quality land, as the lowest quality agricultural land in the Site Search Area. While Grade 3a and 3b land is undifferentiated on the Provisional ALC maps, detailed soil surveys are undertaken on such land to specify the actual grading on the selected site<sup>1</sup>.

<sup>&</sup>lt;sup>1</sup> Please note that the site specific Agricultural Land Classification (ALC) report submitted as part of the accompanying planning application (prepared by Amet Property, dated 13<sup>th</sup> December 2021), confirms that the majority of the proposed Application Site is Grade 3b land which is of 'Moderate' quality (96.2 ha) as opposed to 'good' or best and most versatile (BMV) land. A small section of land in the north-western corner has been classified as Grade 2 land (7.3 ha).



#### 5. SELECTION OF BELVOIR SOLAR FARM SITE

- 5.1 Having regard to the above considerations, the proposed Application Site has been selected as being within a suitable location to accommodate a solar farm. The area of search with relevant constraints and landholdings of more than 50 acres across this area is shown on Plan attached at Appendix 2. The provisional agricultural land classification across the Site Search Area is shown at Appendix 4.
- 5.2 Having regard to the relevant considerations, the Application Site has been selected in summary for the following reasons:
  - The Site allows for a viable connection to the Electricity Network. The 132kV line crosses the Site and therefore has an on-site or infield connection.
  - The landowner is willing to enter into an agreement to promote the land for a solar farm and the Site is therefore available to accommodate this development.
  - Other landholdings of appropriate size within the Site Search Area are not available for the proposed solar farm development as owners of these titles were approached by the Applicant but did not wish to engage.
  - The available land and large landholding on which the Site is located means that a scheme of a viable scale can be achieved.
  - The Site avoids any statutory environmental and planning designations, including designations relating to landscape character, the green belt and areas at risk of flooding.
  - The Site can be accessed using roads of sufficient capacity to accommodate vehicles for construction and decommissioning.
  - There is no unconstrained non-agricultural land, or any previously developed land identified within the Site Search Area on which the scheme could alternatively be provided. It is therefore necessary for this development to be located on agricultural land.
  - The Site has been subject to a detailed agricultural land classification study which confirms that the vast majority of the Site is Grade 3b



'moderate' quality land, which is not classed as best and most versatile (BMV) and subject to protection in planning policy. A small section of the Site forms Grade 2 land. In the absence of any Grade 4 or 5 quality land in the Site Search Area, lower quality agricultural land has been used in preference to higher quality land.

• The proposed Site is not within a nationally or locally designated landscape and therefore meets the Applicant's search criteria in this regard.

#### **Design Evolution**

- 5.3 The Site location identified through the methodology described above was the first step in a detailed process undertaken by the Applicant towards defining and refining the proposed scheme.
- 5.4 Pre-application discussions for the Application Site were first held with Melton Borough Council in November 2019 and a pre-application response (Reference: 19/01312/ENQMG) was issued on 25<sup>th</sup> January 2020. Pre-application discussions were also held separately with Historic England (Reference: PA01126125).
- 5.5 A second round of pre-application engagement with the Council in April 2021 focused on a refined Site area, and at the conclusion of discussions through 2021 with both Melton Borough Council and Historic England, the Applicant took on board the considered advice of Officers with regard to impact on landscape and heritage. The Site area was reduced further to 103.53 hectares (256 acres) and, as the detailed development proposal took shape, the Applicant was pleased to offer both a number of design concessions in response to highlighted concerns and a set of positive 'planning gain' features.
- 5.6 In relation to concessions on overall scale and Site capacity, the initial layout comprised c.140 ha of land, the Site area has now been reduced to 103.53 ha. The number of fields comprising panels and the scale of the proposals have been reduced particularly along the central section of the Site, removal of the northern field and development in the eastern portion of the Site has been pulled-back from the fields closest to the settlement of Muston. The reduction to the scale of the development in these areas will help to minimise views from Muston and the Scheduled Monument as well as Belvoir Castle.
- 5.7 Further revisions were subsequently incorporated to the Site Layout and Landscape Strategy to address Historic England's comments. These amendments



include additional planting of trees to soften views, setback of solar panels from public rights of way (PRoW's) as well as the inclusion of heritage information and interpretation boards.

- 5.8 Assessment of the landscape and visual impacts has also been undertaken to inform the Proposed Development. With regard to landscape character, assessment indicates that the Proposed Development would have limited harm on the existing positive landscape elements associated with the Application Site. The existing landform of the Application Site would remain largely unchanged except possibly at a localised level during the construction and decommissioning period. A Landscape Strategy plan accompanies the planning application to demonstrate how the key characteristics of the local landscape character would be retained and enhanced.
- 5.9 It is considered that the Site lies within an area of relatively flat, agricultural landscape, interspersed with numerous villages and hedgerows set within the Vale of Belvoir. Hedgerow and woodland block vegetation when viewed across a low-lying topography with occasional variations, can combine to limit or expose views towards parts of the Site. This effect has been used to positively inform the design of a proposed solar development, particularly where there are existing blocks of woodland, and the topography is more consistently flat within the Belvoir Vale.
- 5.10 As set out in the submitted Environmental Enhancement Strategy and Landscape Strategy plan, a number of additional elements were introduced as a consequence of the pre-application and public consultation stage. These include:
  - Proposing a new native tree belt (10m wide) along a section of the eastern boundary softening the edge with Muston.
  - Implementing new lengths of hedgerow along footpaths and accommodating the routes within a 10m wide Green Infrastructure Enhancement Corridor which includes wildflower buffers/margins.
  - Reinforcing and enhancing the retained hedgerows across the Site to strengthen the landscape framework and local landscape character.
  - Enclosing the open field boundaries with new lengths of native hedgerow.



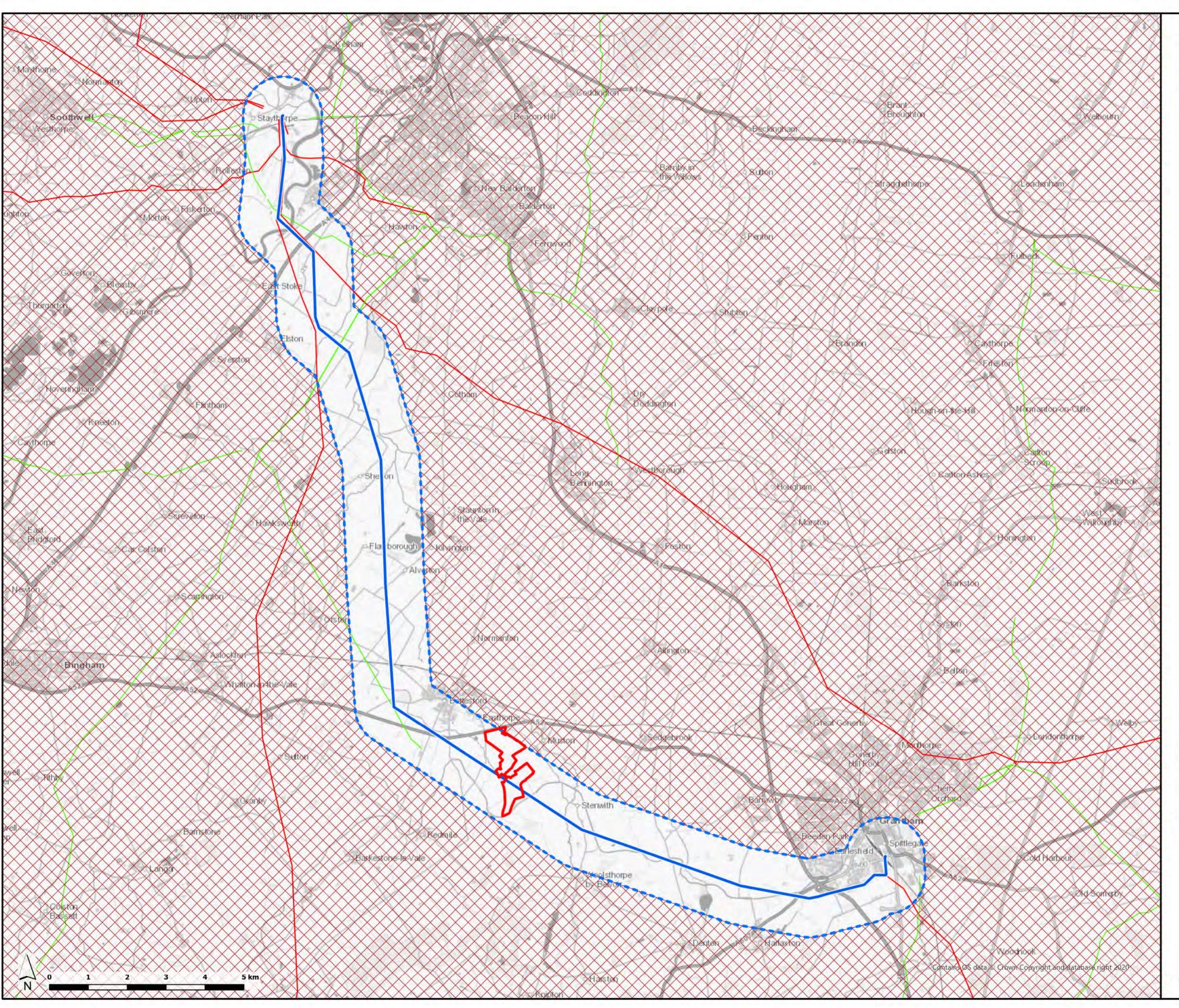
- Planting a species-rich grassland on the land beneath and surrounding the panels and creating a botanically diverse species-rich wildflower grassland outside of the security fence and alongside the retained and proposed on-Site footpaths.
- An area of complimentary species diverse meadowland is proposed adjacent to Muston Meadows SSSI/NNR at the eastern edge of the Site.
- An area of complimentary species diverse grassland habitat adjacent to Muston Meadows SSSI/NNR in the south-eastern corner of the Site.
- Areas of ponds/scrapes with tussocky grass/wildflower planting, hibernaculum, log pile, insect hotels are proposed throughout the Site.
- A permissive path will link up footpath F90/2 with bridleway F85b/2 creating a looped walk.
- Bat and bird boxes, and Skylark nesting areas are proposed throughout the Site.
- Dotted tree planting is proposed to soften views of heritage assets such as Belvoir Castle and local church spires.
- Beehives are located in the south-eastern corner of the Site.
- Outdoor classrooms and picnic areas will be located at the southwest and northeast corners of the looped walk.
- Interpretation boards are proposed within the south of the Site.
- A canalside community orchard and 2.5 acre recreational space is located within the southern end of the Site.
- 5.11 The proposal now also includes direct community benefits. This includes provision of local initiatives and funds for community-based projects. Free school lessons on offer to partner schools in the classroom, and out on Site at the beehives with a qualified beekeeper during the honey harvesting period. In addition, contributing both financial savings and to the decarbonisation of electricity generation.



- 5.12 Having regard to the above considerations, the proposed Application Site has been selected as being within a suitable location to accommodate a solar farm. The site background and design evolution demonstrate that the Applicant has sought to identify the most suitable site for development and through this process have discarded sites to ensure the most suitable site is proposed.
- 5.13 In the context of the other considerations relevant to site selection, the proposed Site would allow for a viable scheme on land which is available for a solar farm development which is preferable in planning terms to other land in the Site Search Area to achieve the substantial public benefits of renewable energy generation.
- 5.14 The proposed Application Site is therefore considered to represent an appropriate location for the Proposed Development. Any landscape and visual, heritage or other effects considered must be judged in this context.



## APPENDIX 1 SITE SEARCH AREA



# Legend Site Boundary Belvoir 132kV Line - 1km Search Corridor Belvoir 132kV Line - Grid Capacity Secured Invalid Grid Costs Western Power Distribution 132kV 33kV

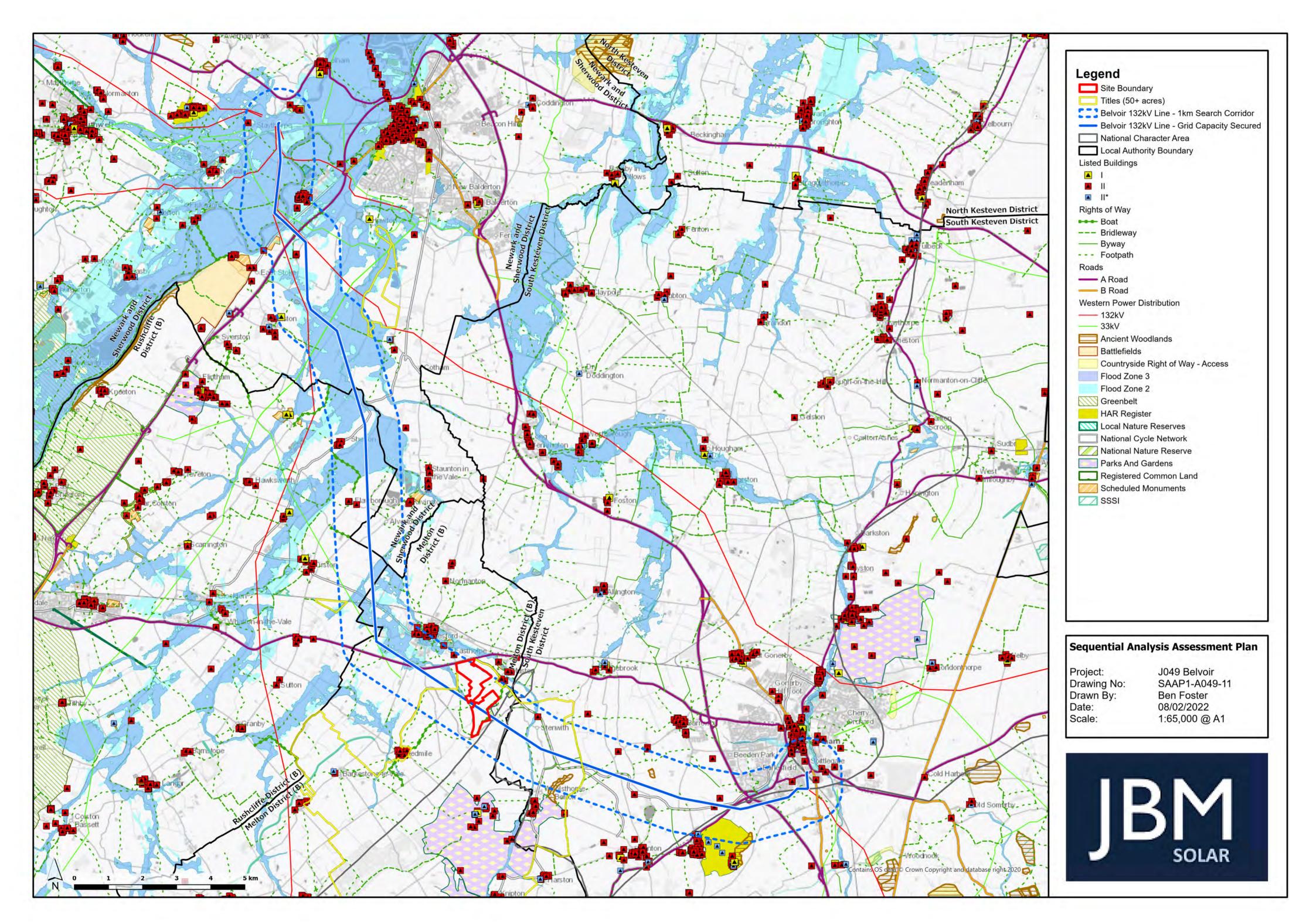
#### Sequential Analysis Assessment Plan

Project: J049 Belvoir
Drawing No: SAAP1-A049-15
Drawn By: Ben Foster
Date: 08/02/2022
Scale: 1:65,000 @ A1





## APPENDIX 2 SITE SEARCH AREA CONSTRAINTS AND LANDHOLDINGS





## APPENDIX 3 SITE SEARCH AREA ROAD NETWORK

