

### 3 THE SITE AND THE PROPOSED DEVELOPMENT

#### 3.1 INTRODUCTION

3.1.1 This chapter of the ES provides a description of the Site and its surrounding context, before setting out details of the Proposed Development and its construction and decommissioning phases. Discussion of the expected approach to the grid connection is also set out.

#### 3.2 APPLICATION SITE

3.2.1 The Application Site is situated within the administrative area of South Oxfordshire Borough Council. The location and extent of the Application Site is shown on **Figure 1.1**. The grid connection does not form part of the planning application, but it is recognised that this would form a wider extent of associated development which it is relevant to consider in the Environmental Statement. It is understood that the grid connection would be made utilising the existing 132kV overhead transmission line which runs to the north of the site, where RES have a confirmed grid connection offer. Further details of this are set out in **Chapter 3: The Site and the Proposed Development**. The site boundary for the purpose of the Environmental Statement therefore encompasses the likely area required for the grid connection as shown on **Figure 1.2**.

3.2.2 The site is located approximately 550m to the north of Nuneham Courtenay. The river Thames is located approximately 400m to the west of the site. The Application Site has an overall area of approximately 57ha. The slightly larger Environmental Statement boundary has an area of approximately 58ha. The centre of the site has an approximate grid reference of 454474, 199982.

3.2.3 A Public Footpath passes through the site, passing centrally from the north.

3.2.4 Existing access to the site for farm vehicles is taken from the A4074. Access arrangements for the proposed development are currently subject of ongoing liaison with the Highways Authority, with the intention that a point of access will be secured direct from the A4074.

3.2.5 Land to the west of the site is located in Flood Zone 3, an area at highest risk of flooding owing to the close proximity of the River Thames. The site is however, located in Flood Zone 1 in its entirety and is therefore at lowest risk of flooding.

3.2.6 There are no designated assets located within the proposed site boundary, however the northern boundary of the proposed development site lies close to the southern boundary of the Scheduled Monument of Romano-British pottery site, prehistoric ring-ditches and enclosures, including medieval ridge and furrow.

3.2.7 Located approx. 220m northwest of the site boundary are two grade II listed Lower Farmhouse and Lower Farmhouse Barn Range approximately 20 metres to the east of the Farmhouse. Located 400m to the south of the site boundary is the Conservation Area of Nuneham Courtenay, a Conservation Area which contains 25 grade II listed buildings and 700m south of the southern boundary of the proposed development is the grade I Registered Park and Garden of Nuneham Courtenay which contains a large number of listed buildings including the grade I and scheduled Carfax Conduit, the grade I Nuneham Courtenay and the grade II\* Church of All Saints.

3.2.8 The land is currently in agricultural use and comprises of areas of Grade agricultural land. Further details are provided in **Chapter 9 Agricultural Land**.

3.2.9 The site is located in the Green Belt. Whilst this is a planning matter, not an environmental designation, it is noted that the findings of the Environmental Statement will also be helpful in informing the test regarding whether there are the Very Special Circumstances which would justify the granting of planning permission.

### 3.3 PROPOSED DEVELOPMENT

3.3.1 The proposed development is for a full planning application, comprising:

***CONSTRUCTION AND OPERATION OF A SOLAR FARM WITH ALL ASSOCIATED WORKS, EQUIPMENT, NECESSARY INFRASTRUCTURE AND BIODIVERSITY NET GAINS – KNOWN AS “NUNEHAM SOLAR FARM”***

3.3.2 The proposed development includes the following:

- The installation of fixed-tilt, bi-facial, ground mounted solar arrays running from east to west across the site;
- Invertors/transformer units which will convert the Direct Current (DC) into an Alternating Current (AC) which is compatible with the National Grid;
- Independent Distribution Network Operator (DNO) substation;
- Internal access tracks, to allow for the construction and maintenance of the solar panels;
- an unobtrusive deer fence will be installed around the perimeter of the site.
- CCTV cameras with infra-red lighting will be installed, where required, on the perimeter fence;
- Additional landscaping including hedgerow planting and improved biodiversity management.

3.3.3 The solar farm proposals are shown in the enclosed **Figure 3.1**, Environmental Statement Infrastructure Layout. Further details of the individual components which make up the scheme, including their proposed size and scale are set out in **Appendix 3.1**.

3.3.4 The solar farm would consist of solar PV panels on metal arrays arranged in rows running from east to west across the site, allowing for boundary landscaping, perimeter fencing and site access. The panels will have a maximum height of 3.6m, including a minimum 0.75m ground clearance to allow for dual purpose renewable energy generation and agricultural sheep grazing. The arrays are spaced a minimum of 2 meters apart to avoid any shadowing effect from one panel to another. The solar panels will be angled at approximately 10–30° to the horizontal, in order to capture maximum radiation. The solar panels will have a non-reflective surface, which will increase the proportion of radiation absorbed, removing the risk of unwanted reflection and glare.

3.3.5 Access is proposed to be taken in the location of the existing agricultural access to the site along the A4074 which is to be upgraded to a simple priority T-junction and widened at the entrance to the site in order to accommodate two-way HGV traffic.

3.3.6 As the proposed solar farm will require little maintenance, the site will be unmanned. In order to protect the installation, an unobtrusive deer fence will be installed around the perimeter

of the site. CCTV cameras with infra-red lighting will be installed, where required, on the perimeter fence.

3.3.7 Hedgerows around the Site would be maintained to screen the development from external views, and also provide biodiversity benefit. Where there are existing gaps in the hedgerow, additional infill planting with native hedgerow species would be considered to improve screening and enhance biodiversity benefit. New trees are also proposed as illustrated on the Landscape Masterplan, included as part of Chapter 6 Landscape and Visual Effects. A Biodiversity Net Gain Assessment has also been carried out and further details are provided in Chapter 7 Ecology.

#### Land Use

3.3.8 The proposed solar farm will involve the temporary change of use of the land but, due to the time restricted nature of the development, the agricultural use will be retained in the long term. The site will also be capable of dual use farming during its operational period, with small livestock able to graze the land between and amongst the panels.

3.3.9 A network of internal tracks around the solar parcels will be laid to allow vehicle access to the supporting equipment to allow for maintenance. The layout and extent of the roads is limited to that necessary to provide access and maximise efficiency.

3.3.10 In addition, the minimal physical intrusion of the development itself will mean that the panels can be removed after their operational lifetime and the land will revert swiftly to full agricultural use. In this respect, the proposed scheme will result in a less permanent impact than most other forms of development.

#### Scale

3.3.11 The scale of development on site has been determined by the equipment necessary to efficiently generate renewable energy. Each array of panels within the field will be mounted on a simple metal framework and have a maximum height of no more than 3.6m. The main purpose of the mounting structure is to hold the modules in the required position without undue stress. It must be capable of withstanding appropriate environmental stresses for the location, such as wind or snow loading. The framework will be driven into the soil no more 1.5m deep, removing the need for deep foundations. Such supporting systems are designed to avoid the use of concrete foundations and are reversible. In some areas of identified potential archaeological sensitivity, alternative 'no-dig' construction methods may be undertaken which avoid disturbance to the ground. Further details are provided in **Chapter 8 Heritage**.

3.3.12 Almost all of the ancillary infrastructure on site will be at or below single storey level (i.e., approximately at or below a maximum of 3m in height). Further details of the proposed size and scale of the ancillary infrastructure are set out in **Appendix 3.1**

#### Grid Connection

3.3.13 Whilst the connection to the grid from the Proposed Development does not form part of the planning application, it is recognised that this would form a wider extent of associated development which it is relevant to consider in the EIA.

3.3.14 The final approach to the grid connection is not confirmed and this would be brought forward by the District Network Operator in due course, rather than the applicant. However, for the purpose of this EIA, an indication of the likely approach to the grid connection has been developed, to allow an understanding of potential environment effects that may arise.

3.3.15 It is understood that the grid connection would be made utilising the existing 132kV overhead transmission line which runs to the north of the site, where RES have a confirmed grid connection offer.

3.3.16 It is expected that a new point of connection tower would need to be built, close to one of the existing towers along the line. For the purpose of this assessment an indicative area for where this might likely be located has been identified on **Figure 3.1**, Environmental Statement Infrastructure Layout. The new tower would be expected to be of a scale and nature which is similar to the existing pylons on the route.

3.3.17 In order for the new tower to be brought on line and the existing tower removed, there would need to be up to two temporary towers either side of the existing tower. The transmission lines would be swung from the existing tower to these temporary towers for the duration of the works.

3.3.18 It is assumed that a temporary vehicular access would be required to run between the Proposed Development and the area required to facilitate the grid connection in and around both the existing tower and the new point of connection tower. This temporary access would be likely to need to cross a ditch and remove part of the existing hedgerow.

3.3.19 It is also assumed that temporary working areas of 50 x 50m would be required around each tower (existing and new PoC tower). This area may be formed of an area of temporary matting placed on to the ground, however it could also require 300–500mm of stone to be temporarily placed onto the ground and potentially also a scrape of the topsoil of up to 300mm. This would be to ensure the ground conditions could accommodate the necessary loading pressures of the plant that may be required to operate in the area. This plant and equipment could include mobiles cranes, mobile elevating work platforms (MEWPS), HGVs, tracked telehandler / excavator and LGVs.

3.3.20 In order to bring the cabling to the ground from the new tower there would be a sub compound which would cover an area of around 10m x 18m and indicative location for which has also been shown on the Environmental Statement Infrastructure Layout.

3.3.21 There would then be cabling needed to run between the sub compound and the substation which is included as part of the Proposed Development. This cabling would be expected to run in a trench up to 1.5m deep and 1m wide.

3.3.22 Up to around 20 workers would be expected to be involved with the grid connection works. It is understood that any temporary welfare provisions or compound associated with these workers would be provided for within the main Solar Farm site.

3.3.23 It is expected that the overall programme for the grid connection works would be a temporary period of around 1 month.

### **3.4 CONSTRUCTION PHASE**

#### Programme

3.4.1 It is anticipated that the solar farm will take approximately 8–12 months to complete. This includes the preparation of the site, assembly and erection of the PV array, installation of the inverters/transformers and grid connection.

Construction Methodology

3.4.2 It is anticipated that the construction phase could span a period of 8–12 months, with the peak number of deliveries occurring in the first three months, during the enabling works. The maximum number of construction trips are anticipated to be circa 100 two-way construction vehicle trips per day (excluding construction staff trips), circa 40 of which are expected to be HGV trips. Deliveries are anticipated to occur between the hours of 8AM and 6PM from Monday to Saturday. The maximum sized construction-related vehicle is anticipated to be an articulated vehicle that is 16.5m in length and 2.55m in width, however smaller HGVs, rigid trucks and LGVs will be used where possible.

3.4.3 A maximum of 60 construction operatives are anticipated to be on-site on a single day. It is assumed that construction operatives will travel to the site by car-share, equating to circa 20 vehicle arrivals in the morning and 20 vehicle departures in the evening. It is proposed for operatives to work on site for a six-day work week from Monday to Saturday, at this stage. The worst case trip generation for the site could generate up to 140 two-way daily vehicle trips (including 100 construction related trips and 40 trips associated with construction workers) during the peak construction period. The number of trips per day will fluctuate depending on the construction phase and as such the typical daily trips will be lower.

3.4.4 The existing site is served by an existing agricultural access off the A4074, circa 3.2km south of the Heyford Hill Roundabout. The existing site access will be upgraded to provide a simple priority junction and widened at the entrance to the site to accommodate two way movement of construction vehicles. All vehicles will approach the site from the A4142 / A423 Oxford Eastern Bypass Road to the north, identified as a "Lorry route for through movements" as demonstrated on the OFQP Lorry Route Map. Vehicles will then proceed south along the A4074 before turning right into the site. Vehicles exiting the site will utilise the inverse of the construction route described above, turning left from the proposed site access onto the A4074 to the A4142 / A423 Oxford Eastern Bypass Road.

3.4.5 Large components shall be delivered using articulated lorries. Associated goods such as smaller components, tools and other equipment will be delivered on flatbed trucks or low loaders. Abnormal Indivisible Load vehicles under the Special Types General Order (STGO) may also be required for delivery of larger components. Should the need for a STGO vehicle(s) be identified during the development of the final delivery solution, the route will be fully assessed, and suitable measures implemented e.g. the use of escort vehicles, as required by law.

3.4.6 The construction of the Proposed Development would use standard construction plant and machinery. Likely plant and equipment would include (but not limited to):

- JCB Diggers
- Dump Trucks
- Telehandler
- Crane
- Fuel Bowser

3.4.7 During the construction period the following activities are likely to be undertaken

- Site preparation (e.g. marking out the site);
- Erection of security fencing and any internal fencing to protect trees, hedges, and other sensitive areas;
- Track construction;
- Piling the frames into the ground;
- Affixing the panels to the mounting frames;
- Trenching for the cable runs, and laying cables;

- Pouring the concrete bases for the cabinets and substation;
- Installation of the inverters, transformers, and battery containers;
- Connecting all the cables up and backfilling the cable trenches; and
- Removal of temporary surfaces.

3.4.8 Preliminary works in the form of site set-up and the implementation of any required ecological protection works would be carried out in accordance with construction standard best practice and ecological guidance and/or licence as appropriate to the species/habitat. It is expected that a Construction Environmental Management Plan (CEMP)/ Construction Management Plan (CMP) would be prepared and could be subject to a suitably worded planning condition.

### **3.5 DECOMMISSIONING**

3.5.1 When the proposed development ceases operation, all major equipment and structures would be removed from the site. It is expected that the decommissioning would take place over a period of approximately six-months.