Chapter 4 – Project Description

Postcombe and Lewknor Solar Farm Environmental Statement

Postcombe and Lewknor Solar Farm Limited

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Acronyms and Abbreviations

AC	Alternating Current
AGL	Above Ground Level
AWI	Ancient Woodland Inventory
CCTV	Closed Circuit Television
CEMP	Construction Environnemental Management Plan
CO_2	Carbon Dioxide
CTMP	Construction Traffic Management Plan
DC	Direct Current
DMP	Development Management Procedure
DNO	Distribution Network Operator
EIA	Environmental Impact Assessment
ES	Environmental Statement
GHG	Greenhouse Gas
Ha	Hectares
HV	High Voltage
LILO	Loop In/ Loop Out
LNR	Local Nature Reserve
PRoW	Public Right of Way
PV	Photovoltaic
RDP	Restoration and Decommissioning Plan
SODC	South Oxfordshire District Council
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest
UK	United Kingdom

1. Proposed Development Description

1.1 Introduction

1.1.1 This chapter provides a description of the Site and the geographical context. It presents a description of the Proposed Development for which consent is being sought, for the purposes of informing the identification and assessment of likely significant environmental effects. This includes the anticipated construction and operation activities connected with the Proposed Development. A brief description of likely decommissioning activities is also provided.

1.2 Site Status and Context

Background and Site Description

1.2.1 The Proposed Development is located approximately 50 m south of the village of Postcombe, 450 m north of the village of Lewknor and 4.3 km south of the town of Thame. The Site consists of two land parcels which border either side of the M40 motorway, with the A40 to the east, Weston Road to the west and Salt Lane to the north (refer to **Figure 1.1**). The Site also includes a 'cable corridor' which extends for approximately 3 km from the substation at the main solar site to the substation at Harlesford Solar Farm (point of connection).

1.2.2 The Site area is approximately 96 ha including the proposed cable corridor. The Site is currently predominantly used for arable agricultural purposes with small sections of woodland. The Site is split into two components, the cable corridor and the solar site which is largely enclosed by trees and hedgerows with more open sections to the north and north-east.

1.2.3 The closest residential property is approximately 80 m from the solar site within the village of Postcombe.

1.2.4 There is one drain located within the Site along the cable corridor. Otherwise, the closest watercourse is approximately 30 m from the western boundary of the western area of the solar site. The whole of the Site is located in Flood Zone 1 according to the Environment Agency's online mapping.

1.2.5 The Site does not overlap with any statutory nature conservation designations. A Public Right of Way (PRoW) footpath (PRoW code: 277/7/10) traverses the eastern land parcel from the south-west corner to the north, with a bridleway bordering the southern Site boundary (Bridleway Code: 277/33/30). The PRoW runs under a 11 kV powerline, a 30 m setback has been put in place to allow access to the PRoW and power line. A PRoW (PWoW code: 102/1/10) also runs parallel to the cable corridor in the first two fields.

1.2.6 The Agricultural Land Classification (ALC) across the solar site is Grade 3a and 3b (**Appendix 8.1**), this is further described in **Chapter 8**: Land Take, Soil Quality and Agricultural Land. The ALC was completed based on a boundary of the developable

area (approximately 77 ha), the overall total of Grade 3a was determined to be 45.5% and 53.2% for Grade 3b.

Environmental Designations and Heritage Assets

1.2.7 The following national and international designations are present within 5 km (refer to **Figure 4.1**). A brief summary of these is provided below with full descriptions provided in the relevant technical chapters of this Environmental Statement (ES).

1.2.8 The following national and international designations are located within 5 km of the Site boundary:

- Chilterns National Landscape (NL) lies ~1.7 km to the south-east of the Site.
- Aston Rowant and Chilterns Beechwoods Special Areas of Conservation (SAC) is ~1.3 km south-east of the Site.
- 8 SSSIs in the area to the south-east of the Site.
  - Aston Rowant SSSI ~2 km
  - Aston Rowant Woods SSSI ~2.2 km
  - Shirburn Hill SSSI ~2.3 km
  - Aston Rowant Cutting SSSI ~2.4 km
  - Wormsley Chalk Banks SSSI ~3.1 km
  - Watlington and Pyrton Hills SSSI ~3.6 km
  - Chinnor Chalk Pit SSSI ~4 km
  - Chinnor Hill SSSI ~4.8 km
- Two SSSIs located to the west and north-west of the Site.
  - Knightbridge Lane SSSI ~2.7 km
  - Spartum Fen SSSI ~3.4 km
- Aston Rowant National Nature Reserve is located ~ 1.4 km south-east of the Site.
- 70 areas of Ancient Woodland Inventory (AWI) of which the closest is ~260 m west of the Site.
- Two Scheduled Monuments (SM):
  - ‘Three bowl barrows on Chinnor Hill, two 150 m and one 600 m south-west of Highlands’ (SM 1016067) (~4.9 km to the north-east of the Site); and
  - Rycote Chapel (SM 1018823) (~4.2 km to the north-west of the Site).
- Two Registered Parks and Gardens (RPGS):
  - Thame Park located ~3.3 km to the north of the Site; and
  - Shirburn Castle located ~2 km to the south of the Site.
- One registered battlefield: Battle of Chalgrove 1643, located ~4.5 km to the east of the Site.

- 15 Conservation Areas (CA):
  - Lewknor CA ~ 400 m south of Site
  - Aston Rowant CA ~ 850 m east of Site
  - Shirburn CA ~ 1.9 km south-west of Site
  - Kingston Blount CA ~ 2 km east of Site
  - Sydenham CA ~ 2.5 km north-east of Site
  - Pyrton CA ~ 2.9 km south-west of Site
  - Oakley CA ~ 3.5 km east of Site
  - Moreton CA ~ 3.6 km north of Site
  - Watlington CA ~ 4.1 km south-west of Site
  - Little Haseley CA ~ 4.2 km west of Site
  - Chinnor CA ~ 4.5 km east of Site
  - Great Haseley CA ~4.6 km north-west of Site
  - Thame CA ~4.7 km north of Site
  - Stokenchurch CA ~ 4.7km south-east of Site
  - Cuxham CA ~ 4.9 km south-west of Site
- 421 Listed Buildings (LB) within 5 km and 57 LBs within 1 km of the Site boundary. The nearest is the Feathers public house LB (Grade II) located 220 m to the north-east of the Site.

Cumulative Developments

1.2.9 **Figure 4.2** shows the locations of other relevant solar farm developments, including those that are operational, under construction and consented within 5 km of the solar site at the time of writing (February 2025) (refer to **Table 4.1**). Potential cumulative effects with these developments have been assessed throughout the ES, where there is sufficient information.

Table 4.1 – Cumulative Developments within 5 km of the Proposed Development

Development	Status	MW	Approximate distance to the Site
Harlesford Solar Farm	Operational	49.9 MW	3.1 km north-north-west
Dodwells Solar Farm	Awaiting Construction	49.9 MW	3.2 km north
Cornwall Solar Farm	Operational	49.9 MW	4 km north-west
Chalgrove Solar Farm	Operational	21.3 MW	4.7 km west

1.3 Description of the Development

1.3.1 The final Proposed Development layout is illustrated in **Figure 1.2a and b** and will comprise solar photovoltaic modules arranged in rows with a height of up to 3.1 m. In addition to the modules, associated infrastructure will include:

- Solar PV Panels;
- inverters;
- transformers;
- high voltage (HV) switchgear and control equipment;
- cabling and interconnector;
- cabling for grid route to connection at Harlesford Solar Farm substation ('cable corridor');
- on-site substation and control building;
- customer station compound;
- spares container;
- meteo mast;
- site access and tracks;
- car parking;
- temporary construction compounds;
- security fencing and CCTV; and
- Landscape planting.

1.3.2 The Proposed Development will consist of an array of solar photovoltaic (PV) modules with an export capacity of up to 49.9 MW. The lowest point of the modules will stand approximately 1 m Above Ground Level (AGL) and will be angled up to 60° to the horizontal and arranged in rows. The array will comprise tracking panels with a maximum panel height will be up to 3.1 m AGL (refer to **Figure 4.3**).

1.3.3 Each PV module will be fixed and mounted upon a prefabricated alloy metal frame. The frames will be anchored to the ground via steel piles that will be driven to approximately 1.5 m into the ground. The framed mounting system would be pile driven, therefore no foundations would be required. The frames will be orientated to the south/south-east in a fixed tilt arrangement.

Inverter Stations

1.3.4 The Proposed Development will include approximately twelve inverter stations and field transformer units will be installed on-site in order to convert the Direct Current (DC) produced by the PV modules, into an Alternating Current (AC) which is compatible with the local electricity distribution network. The inverter stations have been shown on the Site layout plan (**Figure 1.2**) and will be approximately 12.2 m long and 2.44 m wide and 3.04 m high, dimensions of these can be seen in **Figure 4.4**. The

inverters will be situated adjacent to the access track and each will be placed on a concrete plinth.

On-site Cabling

1.3.5 Low voltage electrical cable is required to connect the PV modules to the inverters which are typically mounted to the underside of the PV modules. AC cable from the inverters will connect to the transformers and the on-site substation via underground trenches.

1.3.6 An interconnector cable that will connect the two land parcels will run underneath the motorway, consultation with the highways officer has been undertaken to discuss this further. Further details will be provided at detailed design stage.

On-site Substation and Control Building

1.3.7 The Proposed Development will require a distribution network operator (DNO) substation compound located on the western area of the Site (**Figure 4.5**) with a control room adjacent to the substation. The total area for the substation will be approximately 1,650 m^2. It will be approximately 66 m in length by 25 m wide with a maximum height of 8 m for the transformer component (refer to **Figure 4.5**). The substation will consist of electrical infrastructure required to facilitate the export of electricity from the Proposed Development to the National Grid via a cable connection.

1.3.8 The substation compound will also comprise a control building containing operational monitoring and maintenance equipment as well as provide office space. The control building will be approximately 20 m^2 (5 m wide and 4 m in length).

Customer Substation

1.3.9 Two customer substation compounds will be located adjacent to the spares containers, measuring approximately 12.72 m long by 4.03 m wide and reach a total height of 3 m (refer to **Figure 4.6**).

Spare Container

1.3.10 Two spares containers will be located to the east of substation compound. These will measure 2.6 m in height, 13.7 m long and have a width of 2.4 m. An elevation plan is shown in **Figure 4.7**).

1.3.11 A meteo mast that will be used to monitor the weather conditions and stands approximately 2.6 m in height will be adjacent to the spares container (**Figure 4.8**).

Temporary Construction and Compound

1.3.12 A temporary construction compound will be required within each land parcel of the Site. These will comprise an area of approximately 28,764m^2 with a width and length of 102 m x 282 m in the western field, and an area of 27,740 m^2 with a width and length of 146 m x 190 m in the eastern field. The total compound areas will have an approximate total footprint of 57,000 m^2.

1.3.13 The temporary construction compound will incorporate a temporary laydown area, welfare facilities for construction staff and vehicle parking area. A portable cabin controlling access to the main site with mandatory signing in and out procedures will be located at the entrance to the compound.

1.3.14 On completion of construction works, it is proposed that all temporary structures be removed, and the compound area be restored.

Security Fencing and CCTV

1.3.15 Fencing will be constructed around the Proposed Development for health and safety and security reasons. The fencing will incorporate a maximum height of 2.6 m AGL and is proposed to comprise standard stock mesh interspersed with wooden fenceposts, similar to standard deer proof fencing. An elevation of the security fencing is shown in **Figure 4.9**.

1.3.16 The entrance of the site will comprise of a 6 m wide double leaf access gate. This will incorporate a maximum height of 2.6 m AGL and is proposed to comprise rectangular hollow section frame and weldmesh gates. An elevation of the access gate is shown in **Figure 4.9**.

1.3.17 Closed Circuit Television (CCTV) will be deployed as a security measure. The CCTV will be mounted on wooden posts each measuring approximately 2.4 m in height. An example of the CCTV is represented in **Figure 4.10**. The wooden posts mounted CCTV camera's will be located at approximately 50 metre intervals and will blend in with the fence, having the appearance of a wooden fence post. The CCTV units will be installed inside and adjacent to the proposed security fencing with the exact locations to be confirmed prior to construction. They will be installed at discreet locations and will be oriented away from external landowners and dwellings.

Construction and Operational Access

1.3.18 The construction and operational access to the solar site will be taken from two points of access, one for each of the two land parcels that straddle the M40. Access to the eastern land parcel will be taken from an existing access junction on the A40 to the south of Postcombe. Access to the western land parcel is to be taken from Salt Lane from an existing access junction. Access between the two parcels will be taken using the A40 and Salt Lane.

1.3.19 A combined Transport Statement and Construction Traffic Management Plan (CTMP) (**Appendix 2.4**) in support of the planning application provides detail on access routes to the Site for construction vehicles and provides an estimate of trip generation during construction. The CTMP also includes a review of the proposed route and further detail on how traffic will be managed appropriately.

1.3.20 Prior to construction, any required works to public roads due to the cable corridor will be undertaken and appropriate highway safety measures will be agreed with South Oxfordshire District Council (SODC), with necessary signage or traffic control measures implemented throughout the construction phase on the agreed basis.

On-site Tracks

1.3.21 Internal access tracks will be established to allow for construction and ongoing access/maintenance to the electrical infrastructure on site.

1.3.22 The onsite tracks will have a typical 5 m running width, wider on bends and at junctions and will be surfaced with local compacted, permeable aggregates to match surrounding farm tracks. A cross section of the proposed internal access tracks is shown in **Figure 4.11**.

Public Access

1.3.23 A PRoW footpath (PRoW code: 277/7/10) traverses the eastern land parcel of the solar site from the south-west corner to the north, following discussions with SODC this is proposed to be diverted along the south-eastern boundary of the solar site during construction. Likewise, the footpath (PRoW code: 102/1/10) which runs parallel to the cable corridor is proposed to be diverted parallel to its current location, this will be agreed with SODC. In addition, there is a bridleway bordering the southern solar site boundary (Bridleway Code: 277/33/30), although no impact is expected on this route.

1.3.24 It is anticipated that there will be a temporary closure of the paths during the construction period which will be managed in consultation with SODC and all details of path closure will be included in the Construction Environmental Management Plan (CEMP), drafted and agreed prior to the commencement of construction. It is anticipated that this temporary closure will last up to fourteen months but this is expected to be reduced with a management regime to be agreed with SODC. The current route and the proposed temporary diversions are shown on **Figure 4.12**.

1.3.25 The path and local access will be reopened and maintained for the duration of the operation of the Proposed Development and will be restored to its pre-construction condition as a minimum, addressed through an appropriately worded condition.

1.3.26 Once operational, interpretation boards will be placed around the Site to provide information to the public on solar power and the development itself. Pedestrians would maintain rights of way during the operational period of the Proposed Development.

Grid Connection

1.3.27 An underground cable will link the solar panels from the Applicant's substation to the DNO substation at Harlesford Solar Farm.

1.3.28 The cable corridor will run for approximately 3 km north-west to the substation at Harlesford Solar Farm which is the point of connection to the grid. To construct this route a trench will be excavated with it bed levelled. First, soft cables with be laid alongside bedding soil, next will be the laying of power and fibre optic cable ducts or cables into the trench (**Figure 4.13**). This will then be followed by backfilling with soft soils and the placing of cable covers and warning tape above laid cables. Finally, the rest of the trench will be backfilled and reinstated to pre-excavation conditions.

1.3.29 The cable corridor was previously to be dealt with via a separate consenting process. However, this was added into the planning application in 2025. Therefore, some of the assessments have separated out the assessment of the solar site and the proposed cable corridor. This is detailed further in each assessment where necessary. An indicative route for the grid connection is provided in **Figure 4.14**.

1.4 Construction

1.4.1 The construction of the Proposed Development is expected to take up to fourteen months and anticipated to commence in 2027 due to the secured grid connection. Construction would include the principal activities listed below and is anticipated to conclude in 2028.

- Laying of new access track;
- Erection of security fencing and construction of site entrance;
- Establishing a temporary construction compound, which will include temporary laydown and vehicle parking area Erecting the fencing;
- Trenching and installation of electric cabling;
- Piling and erection of the module mounting frames;
- Installation of transformers, inverters and switchgears; and
- Constructing the substation and customer and control buildings.

1.4.2 Normal construction hours will be between 07:30 and 18:00 Monday to Friday and 08:00 and 13:00 on Saturdays. No works are proposed on a Sunday. These times have been chosen to minimise disturbance to local residents. It must, however, be noted that out of necessity due to weather conditions and health and safety requirements, some generally quiet activities may occur outside the specified hours stated. Any construction outwith these hours will be in line with agreed noise limits and advance warning of any works outwith the agreed working hours will be provided to SODC and local residents.

1.5 Environmental Management

Construction

1.5.1 As part of the construction contract, the contractor responsible for undertaking the construction works (the Contractor) shall sign up to produce, and adhere to, a CEMP.

1.5.2 The CEMP will be drafted and agreed with SODC prior to commencement of construction and shall describe how the Applicant will ensure suitable management of environmental issues during construction of the Proposed Development including, but not limited to:

- noise;
- dust and air pollution;
- surface and ground water;

- ecology (including protection of habitats and species);
- agriculture (including protection of livestock and land);
- cultural heritage;
- waste (construction and domestic);
- pollution incidence response (for both land and water); and
- site operations (including maintenance of the construction compounds, working hours and safety of the public).

1.5.3 The Applicant will provide the following for the above environmental issues:

- details of the all the environmental mitigation which is described within this ES, required during construction of the Proposed Development, and of how the Applicant will implement this mitigation;
- details of how the Applicant will abide by the local and national legislative requirements;
- details of how the Applicant will implement and monitor construction best practice techniques e.g. the control of noise, dust and pollution; and
- details on how the Applicant will liaise with the public and local landowners and how they will respond to any queries and/or complaints.

1.5.4 A micro-siting allowance will be agreed with SODC and included within the CEMP to allow for the avoidance of any important ecological features that arise as a result of the pre-construction surveys.

Pollution Prevention & Health & Safety

1.5.5 Prior to commencement of construction activities, a pollution prevention strategy, contained within the CEMP, will be agreed with SODC to ensure that appropriate measures are put in place to protect watercourses and the surrounding environment.

1.5.6 As with any development, during the construction stage there is the potential for threats to the quality of the water environment in waterbodies, watercourses and local ditches. These mostly arise from poor site practice so careful attention will be paid to the appropriate guidance and policies to reduce the potential for these to occur.

1.5.7 Any fuel or oil held on-site will only be of an amount sufficient for the plant required. This will be stored in a bunded area to prevent pollution in the event of a spillage. There will be no long-term on-site storage of lubricants or petrochemical products.

1.5.8 High standards of health and safety will be established and maintained. At all times, all activities will be undertaken in a manner compliant with applicable health and safety legislation and with relevant good practice, as defined under applicable statutory approved codes of practice and guidance.

Traffic & Transportation

1.5.9 A Transport Statement and CTMP has been provided which provides details regarding transport and access to the Site (refer to **Appendix 2.3**). Site access and routing strategies will be agreed with SODC as set out in the CTMP.

1.5.10 The Applicant will ensure that the vehicles will be routed as agreed with SODC to minimise disruption and disturbance to local residents and road users.

Pre-construction Survey

1.5.11 Pre-construction surveys will be undertaken to update the ecological and ornithological baseline and to perform detailed geotechnical ground surveys, further details of these are provided in the relevant technical chapters.

1.6 Operation & Maintenance

1.6.1 The operational life of the Proposed Development is proposed to be 40 years.

1.6.2 Once operational, the solar array will require occasional maintenance of the solar panels and associated infrastructure. This is expected to consist of a monthly routine Site inspection, with some additional Site visits occasionally required.

1.6.3 The solar PV modules will require periodical cleaning to ensure efficient running of the system, most likely using distilled water. Detergents are not used as they have the potential to damage the solar PV modules. The run-off from cleaning would therefore be clean water and would be dealt with in the same way as rainwater.

1.6.4 There will also be routine site visits for the maintenance of the landscape planting proposed, this is expected to be infrequent.

1.7 Decommissioning & Restoration

1.7.1 The Applicant is committed to decommissioning and restoring the Site to its previous agricultural use at the end of the Proposed Development's lifespan. In the event that a decision was to be made that the site could be repowered/refitted, then a new consenting process, including supporting statement as to the potential environmental effects, would be required.

1.7.2 Decommissioning is a relatively straightforward process and similar to the construction process, with the majority of structures and equipment able to be disassembled and removed in a straightforward manner (with inverters etc. being containerised and simply able to be detached from the piles they are placed on and the solar arrays disassembled and piles pulled up).

1.7.3 The following will be required for decommissioning and removing the Proposed Development at the end of its operational lifespan:

- The substations, transformers, panels and frames will be dismantled and removed via the same access as will be used for construction.

- As much material as possible will be directed to recycling or salvage/re-use, likely to be dependent on demand, market conditions and recycling facilities available at the time.
- The area will be restored to agricultural use by infilling structural holes, repairing cable trenches, and landscaping/reseeding.

1.7.4 The limited physical infrastructure that is required on the ground area (around 5% of the entire site) for a solar farm allows for quick and easy restoration of land back to its existing agricultural land use and very little disturbance to the ground compared with traditional farming activities.

1.7.5 The Applicant is committed to providing a detailed decommissioning and restoration plan, costed by an independent advisor, to be secured through an appropriately worded condition.

1.8 Climate Change & Carbon Considerations

1.8.1 Increasing atmospheric concentrations of greenhouse gases (GHGs), including carbon dioxide (CO_2) (also referred to as carbon emissions) are resulting in climate change. A major contributor to this increase in GHG emissions is the burning of fossil fuels. With concern growing over climate change, reducing its cause is of utmost importance. The replacement of traditional fossil fuel power generation with renewable energy sources provides high potential for the reduction of GHG emissions. This is reflected in UK climate change and renewable energy policy and commitments. The relevant aspects of such policies are summarised in the Planning Statement.

Energy Generation

1.8.2 The combined electrical installed capacity from the Proposed Development is currently estimated to be approximately 49.9 MW. Based on the Proposed Development's location and estimated capacity factor, the annual indicative total electricity output for the Site would be an estimated 57,108 megawatt-hours (MWh), per annum. This is a minimum overall output for the Proposed Development.

1.8.3 Based on the average electricity consumption per household of 2.7 MWh/year (Ofgem, 2024) and assuming generation of 49.9 MW, the Proposed Development would generate enough power to supply approximately 21,151 households.

1.8.4 The Site would be maintained throughout the lifetime to ensure minimal degradation of yield. If the Proposed Development continued to generate at this average load factor over its proposed 40 year lifespan, it is expected that a total of approximately 728.5 GWh of renewable energy could be generated.

1.9 References

DESNZ – Department for Energy Security and Net Zero (2024). Subnational Electricity and Has Consumption Statistics. Available at: www.gov.uk/government/collections/sub-national-electricity-consumption-data. Accessed: 20/02/2025

Ofgem (2024). Average gas and electricity use. Available at: https://www.ofgem.gov.uk/information-consumers/energy-advice-households/average-gas-and-electricity-use-explained. Accessed: 23/03/2025