

# Alleston Solar Farm, Pembrokeshire

## Planning Design and Access Statement

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# **Alleston Solar Farm, Pembrokeshire**

## **Design and Access Statement**

On behalf of **Alleston Clean Energy Limited**

## Document Control Sheet

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## Executive Summary

This Design and Access Statement (DAS) has been prepared by Stantec on behalf of Alleston Clean Energy Limited, in support of a Development of National Significance (DNS) application for the construction, temporary operation and decommissioning of a solar photovoltaic (PV) installation and associated equipment on Land at Alleston Farm, Lower Lamphey Road, Lamphey, Pembrokeshire.

The importance of good design is highlighted across national and local policy. *Designing for Renewable Energy in Wales* sets out the key design objectives and considerations for the sensitive development of large-scale onshore wind and solar installations, to ensure that these proposals clearly address the requirements of Policies 17 and 18 of Future Wales and reflect on the principles of good, contextual design. Policies 17 and 18 of Future Wales provide strong support for the principle of renewable and low carbon energy development and stipulates that these developments should not have an unacceptable adverse impact on the environment or the surrounding landscape.

This DAS explains the design principles applied to the development and the evolution of the design. It additionally demonstrates how the development is delivered in a sustainable manner and will combat climate change, promote energy security, deliver biodiversity enhancement and support a prosperous rural economy.

The DAS is a standalone document. However, it should be read in the context of the entire planning application submission. All supporting documents to the application are identified in the Planning Statement which demonstrates how the development meets the requirements of the relevant local and national policies. The DAS provides the detailed design proposals and access arrangements for the development and summarises how the design has iteratively evolved to respect sensitive receptors, justifying why there is a very strong case for planning permission.

# 1 Introduction

## 1.1 Overview

1.1.1 This Design and Access Statement (DAS) has been prepared by Stantec UK Ltd on behalf of Alleston Clean Energy Limited (a wholly owned subsidiary of Statkraft UK Limited – also referred to as the Applicant) in support of a full planning application for a Development of National Significance (DNS) solar photovoltaic (PV) farm (the Development) at land at Alleston Farm, Lower Lamphey Road, Lamphey, Pembrokeshire (the Site).

1.1.2 Planning consent is being sought for the following description of development:

*“Ground mounted photovoltaic solar farm together with associated equipment, infrastructure and ancillary works”.*

1.1.3 The Development comprises the construction, operation and decommissioning of a grid connected solar farm. The electricity system has a generating capacity between 10 and 350 megawatts (MW) and therefore falls within the definition of a ‘Development of National Significance’ (DNS) under Section 4 (1) of the Developments of National Significance (Specified Criteria and Prescribed Secondary Consents) (Wales) Regulations 2016 (as amended), for the purpose of s62(D) of the Planning (Wales) act 2015 (‘the Wales Act’).

1.1.4 Section 62(D) of the Wales Act States that:

*(3) “Development is of national significance for this purpose if it meets criteria specified regulations made by the Welsh Ministers for the purpose of this section”*

1.1.5 The Development would contribute to local and national ‘Net Zero’ targets with an export capacity of approximately 30 Megawatts (MW) of renewable energy. The CO<sub>2</sub> displacement of the annual electricity production of the generating station would be approximately 5,553 tCO<sub>2e</sub> tonnes<sup>1</sup>.

## 1.2 About the Applicant

1.2.1 The Applicant, Alleston Clean Energy Limited, is part of Statkraft UK Limited. Statkraft is one of Europe’s largest generators of renewable energy and a global company in energy market operations. Statkraft operates in 21 countries and produces hydropower, wind, solar and supplies district heating. Statkraft has worked on renewable energy projects in the UK since 1998, with the first UK office being established in 2006.

1.2.2 To meet the increased need for renewable energy solutions, Statkraft is well positioned as a major international solar and wind developer. In 2022, Statkraft built or made investment decisions supporting the development of 3.6 GW of wind, solar and hydro generation capacity. By 2025, Statkraft aims to have an annual development rate of 2.5–3 GW and 4 GW per year from 2030.

## 1.3 Structure

1.3.1 This DAS includes full consideration of design and access issues as part of the comprehensive preparation of the Development prior to the submission of the application.

1.3.2 The remainder of this PDAS is structured as follows:

- Chapter 2: The Application Site
- Chapter 3: The Development
- Chapter 4: Design and Access Proposals

- Chapter 5: Design Evolution
  - Chapter 6: Summary and Conclusion
- 1.3.3 The DAS is as a standalone document. However, it should be read in the context of the entire planning application submission. All supporting documents to the application are identified in the Planning Statement (PS) Tables 1.1 and 1.2.



## 2 The Application Site

### 2.1 Site Context

- 2.1.1 The Site is located on Land at Alleston Farm, Lower Lamphey Road, Lamphey, Pembrokeshire. Its northern boundary broadly follows the alignment of the Lower Lamphey Road. Watery Lane forms the western and south-western boundaries of the Site. The southern boundary follows an existing area of woodland in a south-easterly direction. There are a small number of residential properties located adjacent to the north and west of the Site boundary.
- 2.1.2 The residential dwellings of Pembroke are 190m north-west of the Site whilst the village of Lamphey is located 370m to the north-eastern corner of the Site.
- 2.1.3 Land use in the surrounding area of the Site is predominantly agricultural, with scattered farmhouses as well as residential developments associated with Pembroke and Lamphey. The West Wales railway line, which connects Pembroke and Lamphey, runs approximately 40m north of the Site. Pembroke train station is located 680m north-east of the Site and Lamphey train station is located 415m east of the Site.

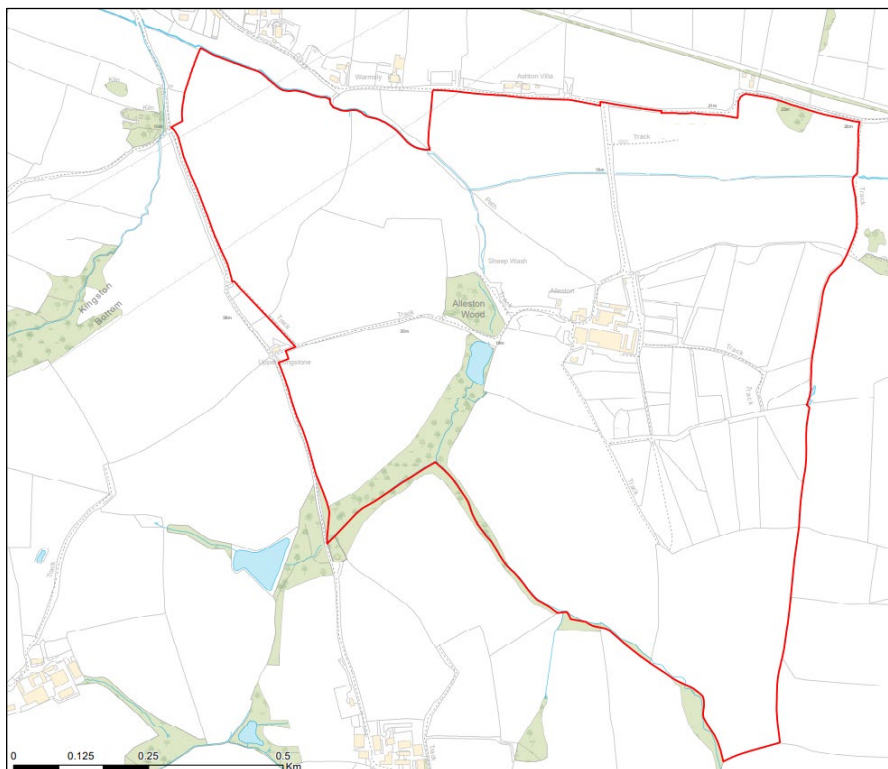


Figure 2.1: Site Location Plan

### 2.2 Site Description

- 2.2.1 The Site encompasses approximately 96 hectares (ha) and comprises of several agricultural fields separated by rows of mature hedgerows. A Field Numbering Plan (Figure 2.2) identifies the 14 fields within the Site.
- 2.2.2 Alleston Farmhouse, a Grade II Listed building, together with its associated buildings is located within the centre of the Site and is accessed from the north along Lower Lamphey Road and the west along Watery Lane, both unnamed tracks. It is proposed to use the existing northern access from Lower Lamphey Road as the access to the Site.

- 2.2.3 Some of the eastern fields within the Site are currently used for equestrian activities, which can continue throughout the lifespan of the solar farm. An area of mature trees and vegetation are located within the south-western region of the Site and run into the central region of the Site, this collection of trees is known as Alleston Wood, there are no plans to remove any of these trees.

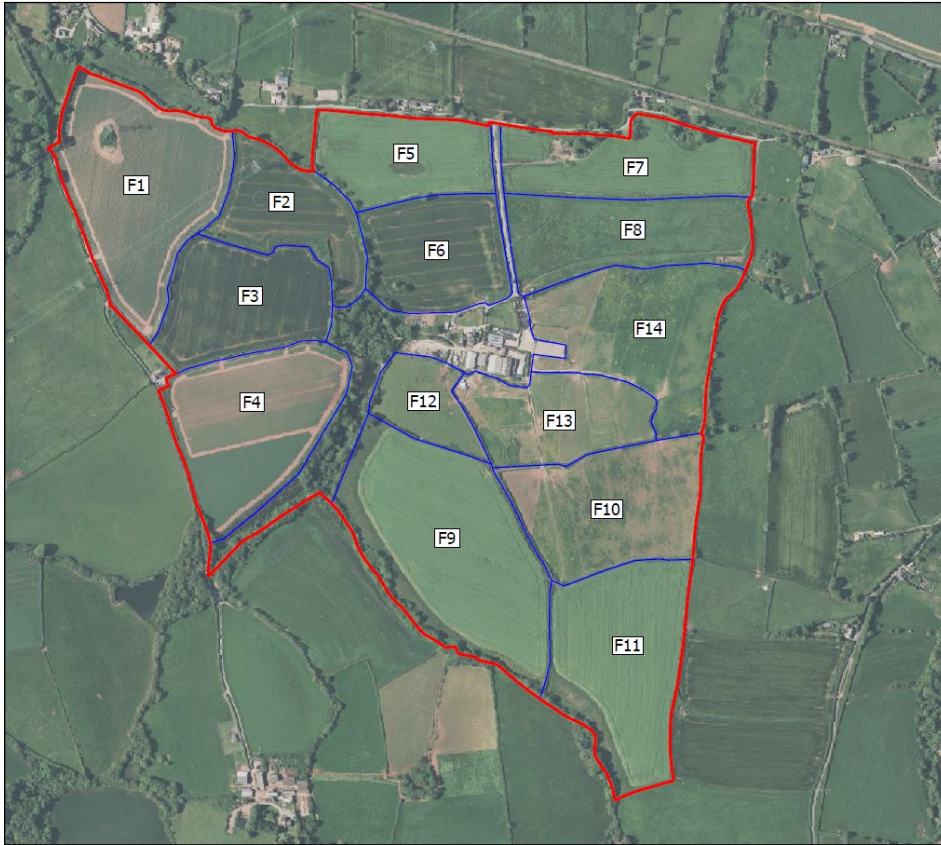


Figure 2.2: Field Numbering Plan

- 2.2.4 In terms of topography, the Site slopes from highpoints in south and west towards the north and east. There are two unnamed watercourses located in the north of the Site, as well as a watercourse running alongside the southwestern boundary.
- 2.2.5 There are two Public Right of Ways (PRoW) which cross and meet in the centre of the Site. The first PRoW (SP32/52) runs to the western boundary of the Site and is accessible via Watery Lane. This PRoW connects to a bridleway (SP32/68) which borders the west of the site and runs in a north-south direction, on Watery Lane. The second PRoW (SP32/51) runs in a north-south direction across the northern and southern area of the Site. This PRoW will be diverted to the southwestern edge of the farm's boundary via a Secondary Consent submitted alongside the main application.

## 2.3 Environmental Baseline Conditions

### Heritage

- 2.3.1 There are no World Heritage Sites or Scheduled Monuments within or adjacent to the Site, and the Site is not located within a Conservation Area.
- 2.3.2 Alleston Farmhouse, a Grade II Listed building, together with its associated buildings is located within the centre of the Site.

2.3.3 Lamphey and Bishop's Palace & Lamphey Court, a Grade II\* Registered Historic Park and Garden, is located approximately 230m north of the Site. Additionally, Bishop's Palace, Lamphey, a Scheduled Monument is located approximately 630m north of the Site and the Lamphey Bishop's Palace & Lamphey Court, Grade II\* Listed Building, is located approximately 640m north of the Site. An additional Grade II\* Listed Building, Kingston Farm is located approximately 1.2km south-west of the Site.

### **Biodiversity**

2.3.4 The Site is not covered by any international or national ecological, landscape or heritage designations. Pembrokeshire Coast National Park is located approximately 300m east of the Site, at its closest point, beyond the B4584.

2.3.5 Statutory ecological designations within 2km of the Site include:

- Freshwater East Local Nature Reserve (LNR), 1.4km south-east of the Site;
- Freshwater East Cliffs to Skrinkle Haven Site of Special Scientific Interest (SSSI), 1.4km south-east;
- Pembroke Mill Ponds LNR, 1.5km north-west;
- Stackpole Quay-Trewent Point SSSI, 1.5km south;
- Milford Haven Waterway SSSI, 1.9km north-west;
- Pembrokeshire Marine Special Area of Conservation (SAC), 1.4km south-east; and
- Bristol Channel Approaches SAC, 1.5km south-east.

2.3.6 Internationally designated ecological Sites within 10km of the Site include:

- Pembrokeshire Bat Sites and Bosherton Lakes SAC, 3.8km south-west and comprising five SSSIs all within 5km;
- Skomer, Skokholm and the Seas of Pembrokeshire Special Protection Area (SPA), 4km south;
- Limestone Coast of South West Wales SAC, 4.2km south-west; and
- Castlemartin Coast SPA, 4.2km south-west.

### **Drainage and Flood Risk**

2.3.7 There are two unnamed water courses located in the northern region of the Site. Areas in close proximity to the watercourses have elevated food risk categorised as high and medium on the Natural Resources Wales Flood and Coastal Erosion Risk Maps<sup>ii</sup>.

### **Agricultural Land**

2.3.8 Agricultural Land Classification (ALC) mapping identified Best and Most Versatile (BMV) Land within the Site comprising Grades 2 and 3a as well as non-BMV land within Grade 3b. The Site was surveyed in April 2023 and January 2024 by Amet Property to carry out a site specific assessment of the agricultural quality of the Site. The detailed survey found the Site to comprise of 7.4 ha of Grade 2 land, 35.3 ha of Grade 3a land, 46.8 ha of Grade 3b land and 6.5 ha of non-agricultural land. The areas considered to

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be Grade 2 are exclusively within the northern region of the Site Therefore, the Site has been assessed to contain 42.7 ha of BMV land.

### **Air Quality**

- 2.3.9 The Site is not located within or in close proximity to an Air Quality Management Area (AQMA). The nearest AQMA is 'AQMA No.2 2012' declared by PCC in 2012 for exceedances of Nitrogen Dioxide. AQMA No. 2 2012 covers part of Westgate Hill, Pembroke, located approximately 1.4km to the north west of the Site.

## 3 The Development

3.1.1 A DNS application is proposed for the construction, temporary operation, and decommissioning of approximately 30 MW solar farm and associated equipment such as inverters, transformer stations, substation, fencing, CCTV, weather monitoring stations and cabling. The solar farm will connect to the grid via a 132kV overhead wooden pole, located within the site. The solar farm development will have an operational lifespan of 40 years from the date of first export of electricity, after which it will be decommissioned.

### 3.2 Components of a Solar Farm

#### Solar Arrays

3.2.1 The solar photovoltaic (PV) panels will have an anti-reflective coating. They will be ground mounted to a piled frame made of galvanized steel or aluminium. The PV panels will be crystalline silicon. Either monofacial or bifacial modules will be used.

3.2.2 The PV modules will be installed on to a fixed tilt structure, facing south, with a tilt range of 10-25 degrees. Key features of the installation which should be noted, and which arise from the topography of the Site. Attention is drawn to the following key points:

- The fixed tilt range is 10-25 degrees from the horizontal;
- The spacing between the rows will range from 2.5-5 metres;
- The lowest part of the structure will be about 0.8 metres above ground level; and
- The highest point of the structure will range from about 3 metres to a maximum of 3.4 metres above ground level. However, at topographical high points within the Site the highest point of the structure will not be more than 3 metres above ground level.

3.2.3 The variations just described will not be noticeable to viewers looking into the Site.

3.2.4 The mounting posts for the support structure are pile driven into the ground at a depth of 0.5–4.5 metres below ground level, depending on the ground condition, the optimum pile depth will be determined by a survey to be carried out prior to construction.

3.2.5 CCTV cameras will be mounted on posts up to 5m high, and positioned at appropriate intervals to ensure that the entire perimeter fence is monitored. Up to 3 weather stations will be installed to measure performance and these will be up to 5m in height.

3.2.6 The perimeter fencing for the Development will consist of deer type fencing and gates of approximately 2m in height. The fence will be offset by 100mm from the ground to allow passage of small animals and will include mammal gates at appropriate intervals.

3.2.7 Internal tracks to allow vehicular access between fields will be constructed of compacted crushed stone, utilising existing internal gateways/gaps where possible. For single tracks, the width typically ranges between 3.5-4 metres whereas a 2-way track would be up to 6 metres wide.



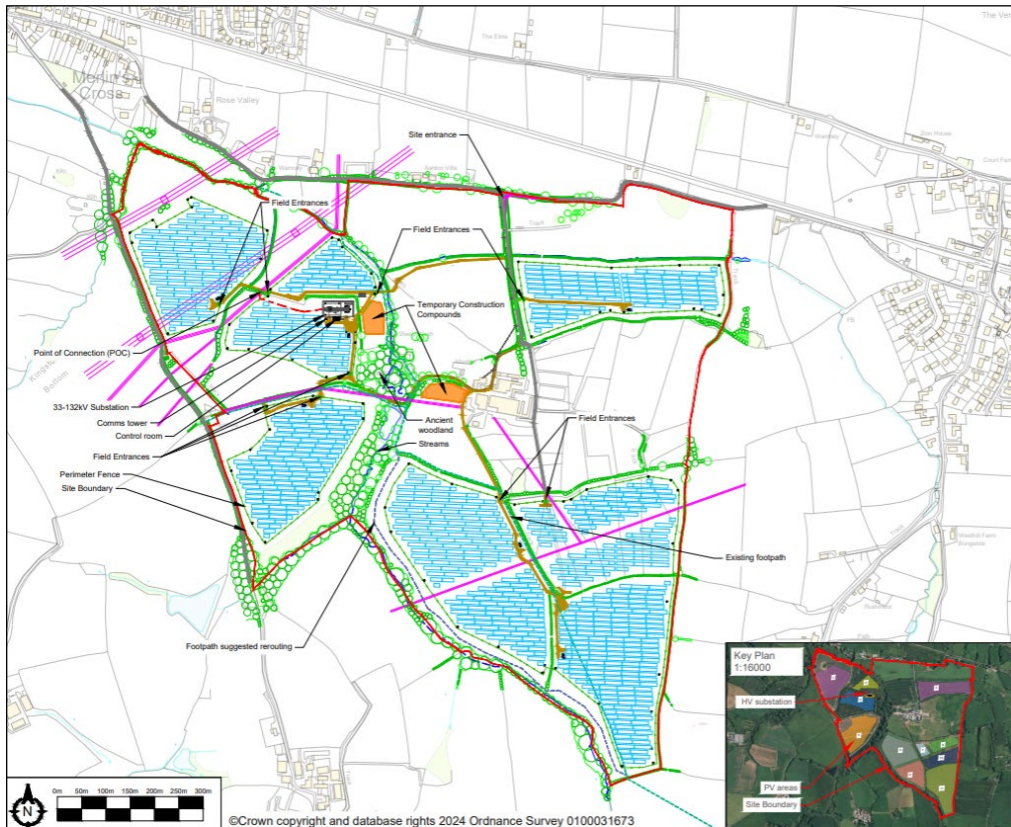


Figure 2.3 General PV Layout

*Substation / HV Compound*

3.2.8 A HV substation compound will be located in the centre (~51.665721, -4.8916358) of the site and will provide the infrastructure to connect the solar farm to the electrical grid via a 132kV overhead line within the Site area. The substation / HV compound, will be surrounded by a palisade fence. Furthermore, a communication mast is potentially required to service the substation. The mast would not be a prominent feature, and details can be provided prior to development commencing, if necessary.

*MV Switchgear Room / Edge of Park Switchgear Station*

3.2.9 The MV switchgear room accommodates the switchgear panels to protect the equipment and allow safe isolation of the MV electrical circuits.

*Monitoring / Control Building*

3.2.10 A monitoring cabin/building will be located next to the HV Compound. The cabin will house the telecommunications/control/SCADA and security system equipment (CCTV), to enable 24-hour remote monitoring of the Site to identify any faults and to relay CCTV footage to an external security company.

*Temporary Construction Compound*

3.2.11 There are two construction compounds proposed within the Site, providing an area for temporary storage, unloading of trucks and the necessary parking and welfare facilities for the workers on site these will be installed and subsequently removed once the construction has been completed. One of which will predominantly be used for the substation infrastructure and the other for the whole site, more centrally located.

- 3.2.12 The road layout would allow sufficient room for delivery vehicles to manoeuvre, unload their cargoes and exit in a forward gear. The compound would provide parking for light vehicles and HGVs undertaking deliveries to unload. A temporary permeable stone surface will be used for the compound.

*Storage Containers*

- 3.2.13 Two 40ft shipping containers will be installed to provide storage space for the solar farm.

*Grid Connection*

- 3.2.14 Onsite grid connection will be achieved via a 132kV overhead line (OHL). Alleston Farm will connect to the Pembroke GSP via a tee-in arrangement at or near pole 82 of the Pembroke to Golden Hill 132kV circuit located within the site. A new 132kV circuit, underground cable (UGC), will be constructed between this point of connection and Alleston Farm.

### **3.3 Construction Phase**

- 3.3.1 The Construction Environment Management Plan (CEMP) will set out how mitigation measures to reduce effects of construction on the environment will be implemented. The document will include a broad work programme, construction activities and arrangements for environmental monitoring. Currently an outline CEMP (oCEMP) has been drafted and the full CEMP will be secured via a planning condition.
- 3.3.2 As set out in the Transport Statement & Construction Traffic Management Plan, construction is estimated to be approximately 9 months and based on anticipated timescales for determination, is expected to commence in 2027. The specific works order and sequencing will be developed further by the appointed contractor following the grant of planning permission. However, the construction works will comprise five key activities: Site preparation, construction of the substation, solar array installation, associated infrastructure installation, and completion works. Traffic generation during the construction phase varies based on the type of activities undertaken. It is anticipated that the peak of construction activity will occur in Month 5 of the construction programme, with a total of 98 construction movements (49 inbound and 49 outbound trips per day), comprising 48 Heavy Goods Vehicle (HGV) and 50 car / Light Goods Vehicle (LGV) movements. To accommodate traffic and to minimise disruption as far as possible, a Construction Traffic Management Plan (CTMP) is proposed and outlined within the Transport Statement & Construction Traffic Management Plan. Construction activities and deliveries will be carried out Monday to Friday between 07:00 and 19:00 and on Saturdays from 08:00 to 13:00. All work outside these hours will be subject to prior agreement of, and/or reasonable notice to PCC, as appropriate.
- 3.3.3 The location where staff will travel from is unknown at this stage and will depend on the appointed contractor, however, it is envisaged that the majority of the workforce during the construction period will be based in Pembroke and Pembroke Dock. They will therefore access the Site via Upper Lamphey Road and the village of Lamphey Road. It is proposed that 15% of the construction staff would arrive in single occupancy cars and that the remaining 85% will arrive in LGV or minibuses. A Travel Plan will be developed to help reduce staff traffic numbers.
- 3.3.4 Traffic management procedures proposed within the Transport Statement & Construction Traffic Management Plan would ensure the safe operation of the approach routes to the Development during construction. Determination of the final details of these traffic management measures will occur once the contractor has been appointed and can be secured via an appropriately worded planning condition.
- 3.3.5 The Site has been designed such that all vehicles can enter and exit in a forward gear, and therefore no vehicles shall reverse onto unmanaged public roads.
- 3.3.6 There are seven passing places on Lower Lamphey Road between Lamhey and the proposed site access junction, which are currently small and not considered wholly suitable to enable the safe access for HGV traffic. It is proposed that these existing passing places are lengthened and that additional mitigation measures are adopted to accommodate construction traffic.

### 3.4 Operational Phase

- 3.4.1 The Development has a proposed operational lifespan of 40 years. During the operational phase maintenance activities, including servicing of plant and equipment and vegetation management, will be undertaken. The operational phase will also comprise cleaning of the solar panels as part of the general maintenance and occasional visits to the substation by the Distribution Network Operator (DNO). Traffic flows in this phase will comprise of circa two LGV inbound trips every two weeks.
- 3.4.2 Vegetation will grow under the solar panels and around the field margins, which will require ground maintenance. It is envisaged that a Landscape and Ecological Management Plan (LEMP) will be conditioned to any planning consent and set out how the land would be managed and monitored throughout the Development's operational lifetime. An outline LEMP (oLEMP) has been submitted with the planning application. The land between the panels within the fenced area can be made available for sheep grazing, allowing agricultural use whilst helping to maintain the Site.

### 3.5 Decommissioning

- 3.5.1 At the end of the proposed 40-year operational period, the solar farm and its ancillary equipment will be decommissioned, dismantled and removed and the Site reinstated to its current agricultural use.
- 3.5.2 All solar array infrastructure including modules, mounting structures, cabling, inverters and transformers would be removed and reused, recycled or disposed of in accordance with best practice requirements at the time of decommissioning. The future of the electrical compound such as the substation would be discussed with the DNO and agreed with the landowner and PCC prior to commencement of decommissioning.
- 3.5.3 The traffic management and reinstatement work of the decommissioning phase will be addressed in the Decommissioning Environmental Management Plan (DEMP). An outline DEMP (oDEMP) forms part of the planning application, and a full DEMP will be secured via a planning condition. A full DEMP prepared closer to the point of decommissioning will be able to take into account and respond to policy and legislative requirements in place at that time.



## 4 Design and Access Proposals

4.1.1 This Section of the DAS takes forward key findings of the appraisal of context and draws upon the pre-application engagement with the Council and local communities. The following matters are covered:

- Access and routing;
- Community safety;
- Character (including consideration of use, amount, layout, scale, appearance and landscaping); and,
- Environment Sustainability.

### 4.2 Access and Routing

#### Access

4.2.1 The details of the proposed access and construction routing are provided within this application's Transport Statement & Construction Traffic Management Plan.

4.2.2 Main access to the Site will be from the existing access on Lower Lamphey Road, which borders the Site to the north, via the existing access junction to Alleston Farm. The site access junction will be upgraded to suit the Development and the junction works will be agreed with PCC prior to works commencing via a road opening permit. The junction would be constructed to allow two vehicles to pass when turning in and out of the junction. The edge vegetation along the existing road will be trimmed back to improve clearance.

4.2.3 Access to the solar PV array areas would be taken from new and upgraded private access tracks, leading from the farm access track. The onsite access tracks for each array area would be constructed of compacted engineered fill and can be elevated above existing ground where required. The access track leading from the public road will have a metalled finish over the first 10m to help reduce the likelihood of any mud or dust being transported onto the public road.

4.2.4 Internal tracks to allow vehicular access between fields will be constructed of compacted crushed stone, utilising existing internal gateways/gaps where possible. For single tracks, the width typically ranges between 3.5-4 metres whereas a 2-way track would be up to 6 metres wide.

4.2.5 Wheel washing equipment will be established at the site entrances during the initial works to ensure that any egressing vehicles do not impact the local highway network by virtue of debris. A road sweeper will also be provided during the construction phase to ensure that Lower Lamphey Road is kept clean in the vicinity of the site access junction.

4.2.6 A banksperson will be present at the site access to help guide traffic within the Site and to ensure health and safety access for the Site. The banksperson will be in radio contact with the wider site compound to advise of movements to and from the Site.

#### Construction Routing

4.2.7 The existing access route leading from Lamphey to the A477 (see Figure 4.1) has been assessed in the Transport Statement & Construction Traffic Management Plan, which establishes that there are no specific road safety issues within the immediate vicinity of the Development that are currently required to be addressed or will be exacerbated by construction activities.



CCTV cameras will be installed as part of the Development. CCTV will only record inwards towards the Site and not capture footage on any public or private land.

- 4.3.2 A review of the PCC Definitive Plan shows that there are three public footpaths and one bridleway located in close proximity to the Development, its potential access from Lower Lamphey Road or within the development area, as shown in Figure 4.2. A review of the National Cycle Route (NCR) map indicates that NCR 4, London to Fishguard via Reading and Pembroke uses Lower Lamphey Road for local access, cyclist and equestrian use. It is recognised that additional measures will need to be incorporated into the detailed CEMP for the protection of Public Right of Way (PRoW) users during the construction period. This will also be detailed within the secondary consent application for the rerouting and enhancement of the southern part of the PRoW SP32/51.



Figure 4.2: Footpath Plan

- 4.3.3 As outlined above, during the construction period, HGV movements will be controlled by the CTMP. Furthermore, a final CEMP is proposed to be secured as a pre-commencement condition. An oCEMP is provided with this application dealing with environmental health matters (e.g. air quality) not included in the CTMP. It is expected that a final CEMP will expand in scope to provide for holistic management with measuring arising from other inputs such as the Ecology Impact Assessment.

## 4.4 Character

### Use

- 4.4.1 The installation will incorporate ground-mounted solar PV arrays and associated infrastructure. The nature of such a solar farm is described earlier in this DAS. The use of farmland, such as this Site, for energy production will have a positive contribution on the UK's energy security and support a reduction in reliance on fossil fuels. Further discussion of the use of agricultural land at Alleston Solar Farm is found in the Alternative Sites Assessment.

- 4.4.2 The Site is currently utilised for arable farming and for an equine enterprise in the eastern portion of the site. It is typical of the local area with demarcated fields separated by mature hedgerows. Different areas of the Site are let to various farmers, which grow maize and potatoes. The farm has also further diversified into making small-bale haylage. The Development represents a temporary farm diversification strategy for the arable practices on Site which has the ability to improve the economic situation of the farm. In addition, the co-location of horse grazing and continued agricultural use will enable the farm to maintain agricultural output and economic activity alongside the solar arrays.
- 4.4.3 In addition to providing a source of clean renewable energy into the grid network alongside co-located grazing use, the Development will secure a Net Biodiversity Benefit (NBB) as detailed in the NBB report submitted with this planning application.
- 4.4.4 The Development is temporary and reversible. Upon the expiration of the 40-year consent the components of the solar farm described in Section 3 of this DAS will be removed. This process will largely be a reversal of the installation and the Site will be available again for return to arable use. The resting and improvement of the soil over the lifetime of the Development will improve options for the farm and its crop options. This period of soil recovery is an investment in the farmland's arable agriculture future.

#### **Amount and Scale**

- 4.4.5 The Site extends to approximately 96 ha. As discussed throughout this DAS, areas of the Site will be undeveloped to incorporate areas of habitat planting and ecological buffer zones, as well as to allow the equestrian business and agricultural use to continue. The Development will therefore not cover the entire Site area.
- 4.4.6 The spacing between the rows of solar panels will range from approximately 2.5-5 metres between each row, depending on field topography. The PV modules will be installed on to a fixed tilt structure, facing south, with a tilt range of 10-25 degrees from the horizontal. The lowest point of the panel would be a minimum of 0.8m from the ground and the highest point of the structure will range from about 3 metres to a maximum of 3.4 metres above ground level. However, at topographical high points within the Site the highest point of the structure will not be more than 3 metres above ground level. While the final layout of the scheme will be within the parameters established by this planning application, the number of solar panels and their exact positioning across the Site will be informed by current best-available technology and energy generation optimisation as engineered in the pre-construction phase.
- 4.4.7 The mounting posts for the support structure are pile driven into the ground at a depth of 0.5–3.5 metres below ground level, depending on the ground condition, the optimum pile depth will be determined by a survey to be carried out prior to construction.
- 4.4.8 The solar arrays form the bulk of structures proposed at the Site, though additional equipment will be required. This includes grid infrastructure, together with inverter-transformer units, fencing, and CCTV cameras. The CCTV cameras will be mounted on posts up to 5m tall and the perimeter fencing is proposed to be up to 2m high. Up to 3 weather stations will be installed to measure performance and these will be up to 5m in height.
- 4.4.9 The height of other infrastructure associated with the Development will be a maximum of approximately 3-3.4m.
- 4.4.10 Although the Development requires a relatively large area of land, in terms of physical intrusion the Development would only impact a small proportion of the Site area due to the limited surface area required to support the solar PV above-ground presence. The overall extent of ground disturbance on-site would be minimal with only around 1.5% of the overall Site area excavated or otherwise disturbed to implement the cabling, access tracks, and ancillary buildings.
- 4.4.11 At the end of the generating station's temporary operational consent the entire system can be removed, and the field can return to agricultural use with no residual impacts. Therefore, the Development should



be considered fully reversible. The soil will have rested and is likely to have improved by the absence of intensive arable farming practices during the lifetime of the generating station.

### **Appearance**

- 4.4.12 The elements of the Development are described in Section 2 of this DAS.
- 4.4.13 Whilst the intention of the Applicant is to minimise views of the Site with planting to ensure it blends into the surrounding landscape as much as possible, the rows of solar panels are not necessarily unattractive and public attitudes with respect to the climate emergency have led to an increasingly positive perception of the presence of clean energy technology in the landscape.
- 4.4.14 Compared to other forms of energy generation such as gas-fired power stations or wind turbines, the Development is considered to have a lower impact on the appearance of the wider countryside and landscape in the area, particularly when the existing strong degree of visual containment, which will be enhanced, is taken into account.
- 4.4.15 The solar photovoltaic (PV) panels will have an anti-reflective coating. They will be ground mounted to a piled frame made of galvanized steel or aluminium. The PV panels will be crystalline silicon. Either monofacial or bifacial modules will be used.
- 4.4.16 Further details of the proposed solar arrays and associated infrastructure are provided on the application drawings submitted with the application.

### **Layout**

- 4.4.17 The Site Layout has been influenced by the need to optimise solar gain, respond to field topography, and accommodate constraints. The location and layout of the Development is shown on the Site Location Plan and Proposed Site Layout Plan attached as Appendix A and B respectively.
- 4.4.18 The Layout Plan shows the indicative arrangement of the Development within the Site. The parameters of this layout have been carefully considered to ensure any potential significant effects are minimised.
- 4.4.19 The spacing between the rows of solar panels will range from 2.5-5 metres, depending on field topography.
- 4.4.20 The solar modules will be mounted on the structural framework with panels in either landscape or portrait orientation forming arrays with an appropriate 10-25 degree tilt angle. The arrays are fixed (non-tracking) and arranged in an east/west aligned linear fashion with suitable spacing across the Site, meaning that when viewed from above, the gaps between rows are wider than the area of ground covered by the panels.
- 4.4.21 Arrays will be laid out east-west in order for modules to face south, optimised for energy generation. A deer type security fence will encircle the Site, with gates to allow access for security or maintenance. There will be CCTV cameras at appropriate intervals of the perimeter fence. Inverter-Transformer units will be erected and dispersed across the Site to maximise their efficiency and to keep them away from sensitive noise receptors.
- 4.4.22 Buffer zones (informed by relevant technical guidance and advice) have been signed into the proposed layout including:
- No solar panels within 10m of a watercourse, including drainage ditches;
  - Buffer of at least 5m from all hedgerows and trees;
  - Root Protection Areas of existing and proposed trees and hedges, including 15m from the Ancient Woodland 'Alleston Wood'; and,

- Appropriate stand-off distances from existing electrical infrastructure within the Site.

4.4.23 The height of other infrastructure associated with the Development will be a maximum of approximately 3-3.5m.

#### **Landscaping and Biodiversity**

4.4.24 Chapter 7 (Landscape and Visual Effects) of the Environmental Statement comprises a Landscape and Visual Impact Assessment (LVIA), which includes an analysis of the physical context of the Site, a summary of the key planning policies and evidence base relevant to the Development, an appraisal of the landscape features and character of the Site, and an assessment of the landscape and visual effects of the Development with consideration of the landscape and visual qualities of the Site and the wider landscape. A Landscape Strategy has been prepared that incorporates landscape and ecological measures into the Proposed Development and has been informed by the sensitive receptors identified in the LVIA, the strategy and guidelines of the landscape as set out by the LANDMAP assessment and local planning policy and by ecology and tree surveys and recommendations. The Landscape Strategy Plan (see Appendix D) proposes enhancements to the landscape that would limit the visual impact of the Development while also increasing the biodiversity value of the Site.

4.4.25 The Landscape Strategy seeks to retain, reinforce and replace landscape features that are characteristic of the local landscape through the following measures:

- Existing hedgerows surrounding and within the Site will be retained and enhanced. Over 1.5km of proposed native hedgerow will be planted to gap up and reinstate field boundaries and enhance habitat connectivity within the Site. In targeted areas, hedgerow trees will also be allowed to grow to provide visual screening of the Development;
- Approximately 2.66ha of native woodland planting is proposed. Woodland is located where it will enhance the existing landscape character and provide some visual screening of the Development;
- 0.08ha of orchard planting is proposed which will provide considerable biodiversity benefits, as well as enhancing the historic character of the Grade II Listed Alleston Farm;
- A minimum of 100m buffer has been proposed from the property Upper Longstone at the Sites western boundary. No solar infrastructure will be built within the buffer, and will be situated on the lower extents of the north facing slope as to preserve views out toward the Pembroke valley landscape from Upper Longstone;
- Solar panels and fencing will be set back from the northern Site boundary whereby there will be no solar infrastructure built within Field Parcels 5 and 7 as to protect views towards and the setting of the Grade II Listed Alleston Farm; and,
- A greater range of grassland types are proposed, along with the preparation and seeding of existing grassland and changes in management regimes to achieve agriculturally improved areas.

4.4.26 Over time, the proposed planting as described in the Landscape Strategy will become established and, together with the management and maintenance regimes of existing vegetation, will reinforce the existing landscape pattern and framework within which the Development is located and substantially increase the screening provided. The Landscape Strategy will contribute to the significant NBB provided from the Development.

4.4.27 The inherent characteristics of the Development, including its restricted height, unsubstantial massing, and absence of any perceptible activity limit the potential for adverse landscape and visual effects. Furthermore, the design of the proposals and Landscape Strategy have been prepared via an iterative process, and therefore, the layout of the Development is guided by a robust understanding and analysis of the landscape to respond sensitively to landscape and visual context with the aim of reducing, or where possible avoiding, significant landscape and visual effects.

4.4.28 It is considered that a suitably worded pre-operational condition can be attached to a planning permission to secure the final design of the landscape mitigation and enhancement. The LEMP would be a detailed site-specific management and monitoring plan to enhance and maintain the ecological value of the Site for the operational phase of the Development.

## **4.5 Environmental Sustainability**

4.5.1 The Applicant seeks to install a solar PV farm which will provide a valuable source of renewable energy. There are clear and substantial benefits presented by the Development, primarily through the opportunity to provide a secure local source of clean energy. Furthermore, the operation of the solar farm will not present any risks in terms of hazardous materials, pollution, emissions, or any other operational hazards. Indeed, the solar farm will also significantly reduce the use of fertilizer, pesticides and other chemicals associated with modern farming within the Site and will therefore allow the soils to recover and become healthier during its operational lifetime.

4.5.2 As set out in the PS, there is a strong local, national and international policy support for delivering ambitious reductions in carbon emissions through the growth of renewable energy generation. Given the export capacity of 30 MW, the Development would make a substantial contribution towards these targets.

4.5.3 Therefore, there are significant environmental benefits associated with the Development.

## 5 Design Evolution

5.1.1 The proposals have been developed as part of an iterative process of design and assessment taking into consideration the guidelines set out in Designing for Renewable Energy in Wales SPD<sup>iii</sup>. Opportunities and constraints identified in the baseline landscape and visual assessment have been embedded into the design in order to safeguard features of landscape and visual sensitivity, maximise the potential for beneficial effects, and respond to local planning policy and guidance. The Development has additionally evolved in response to feedback from public exhibitions, consultees, local residents and consultants. These key changes are summarised below in Table 5.1.

**Table 5.1: Design Evolution**

Version Ref	Date	Details of amendment to design	Reason for amendment to design.
Initial Design (SKUKX-ALLES-000-PVL-100.02.1 (20231127) PV Layout) (Appendix C)	November 2023	Excluded fields F14 and F13 located in the middle/east of the site.	Landowner will retain excluded fields for equestrian activities.
		Buffers introduced to nearby properties on Lower Lamphey Road and on Watery Lane.	To mitigate for noise and visual impact.
		Triangular parcel in the north of the site in F1 excluded from layout.	To minimise use of BMV land & to mitigate for noise and visual impact.
		Provisional re-routing of Public Right of Way (PRoW) to the southwestern boundary.	To avoid public walking through the proposed solar arrays.
Final Design (Appendix B)	August 2024	Confirmed re-routing of Public Right of Way (PRoW) to the southwestern boundary.	Positive feedback from the public exhibitions in November 2023, highlighted in the Pre-Application Consultation Report.
		Removal of panels and orchard planting in F6.	To mitigate the harm to the heritage asset / change in the historic agricultural landscape character of Grade II Listed building, Alleston Farm. Orchard planting will be introduced to enhance the setting of the Grade II Listed building, this will also have a biodiversity benefit.
		Removal of panels in F5 & F7.	To minimise use of BMV land, these fields will be continued to be used for agriculture.



		Adapted buffers in F3 & F4 to the nearby property on Watery Lane.	Following a site visit, amendments were made to reduce the potential visual impact, taking into consideration the topography.
		Removing panels in F3, as well as moving roads in F6 and routing cable trenches.	To minimise risk in relation to potential archaeology.
		Fencelines adapted across the site.	To minimise/avoid the removal/disturbance of hedgerows and existing trees, where possible.
		Panels have been placed under the 400kV OHL line in F1.	To maximise the capacity of the site.
		Carefully thought positioning of the temporary construction compounds.	To minimise disruption onsite, noise and views of construction onsite.
		Redesign of substation onsite.	To comply with NGED's new 132kV requirements (May 2024), whilst managing visual impact and ecological habitats, including avoidance of hedgerow removal.
		In addition to the amendments outlined above, the following points were considered when preparing the final layout: <ul style="list-style-type: none"> <li>• Local biodiversity &amp; ecology in the fields, stream and Ancient Woodland;</li> <li>• BMV agricultural land;</li> <li>• Heritage setting of the Grade II Listed Building Alleston Farmhouse;</li> <li>• Flooding of the watercourse to the south across the fields; and,</li> <li>• Views from properties along lower Lamphey road.</li> </ul>	These were raised as concerns at the first round of public exhibitions.

## 6 Summary and Conclusions

- 6.1.1 The DAS supports a planning application submitted on behalf of Alleston Clean Energy Ltd for the following development:

*“Ground mounted photovoltaic solar farm together with associated equipment, infrastructure and ancillary works.”*

- 6.1.2 The reduction of CO<sub>2</sub> is of national importance within the United Kingdom as the Government seeks to reduce overall greenhouse emissions by at least 100 per cent (against 1990 levels) by 2050. Furthermore, Pembrokeshire County Council declared a Climate Emergency in May 2019 and has committed to becoming a net zero carbon local authority by 2030 and district wide net zero by 2050. This Development will contribute to the reduction of CO<sub>2</sub> emissions and will assist with the Council in realising its carbon neutral target.
- 6.1.3 This DAS outlines the design principles and access elements that have been considered in the layout, scaling, and sizing of the Development. The DAS demonstrates how, through good design, the Development can be delivered in a sustainable manner to help combat climate change, provide energy security, deliver biodiversity gains, and support a prosperous rural economy.
- 6.1.4 The planning drawings and technical assessments submitted within this application demonstrate that the Site is suitable for a solar farm and have informed the design and access of the Development such that it does not give rise to unacceptable impacts.
- 6.1.5 The Development is in accordance with local and national planning policy and will make a significant contribution to the transition to a renewable energy system and the delivery of net zero. The design process has led to the optimum, least impactful development possible, representing ‘good design’ which reflects local policies and engagement with the community. This DAS has demonstrated the robust approach taken to the iterative design of the Development, taking into account the extensive consultation undertaken with local stakeholders, local concerns and various environmental constraints.
- 6.1.6 In conclusion, it is considered that the complies with the adopted Development plan and all other material considerations. Planning permission should therefore be granted accordingly.

## REFERENCES

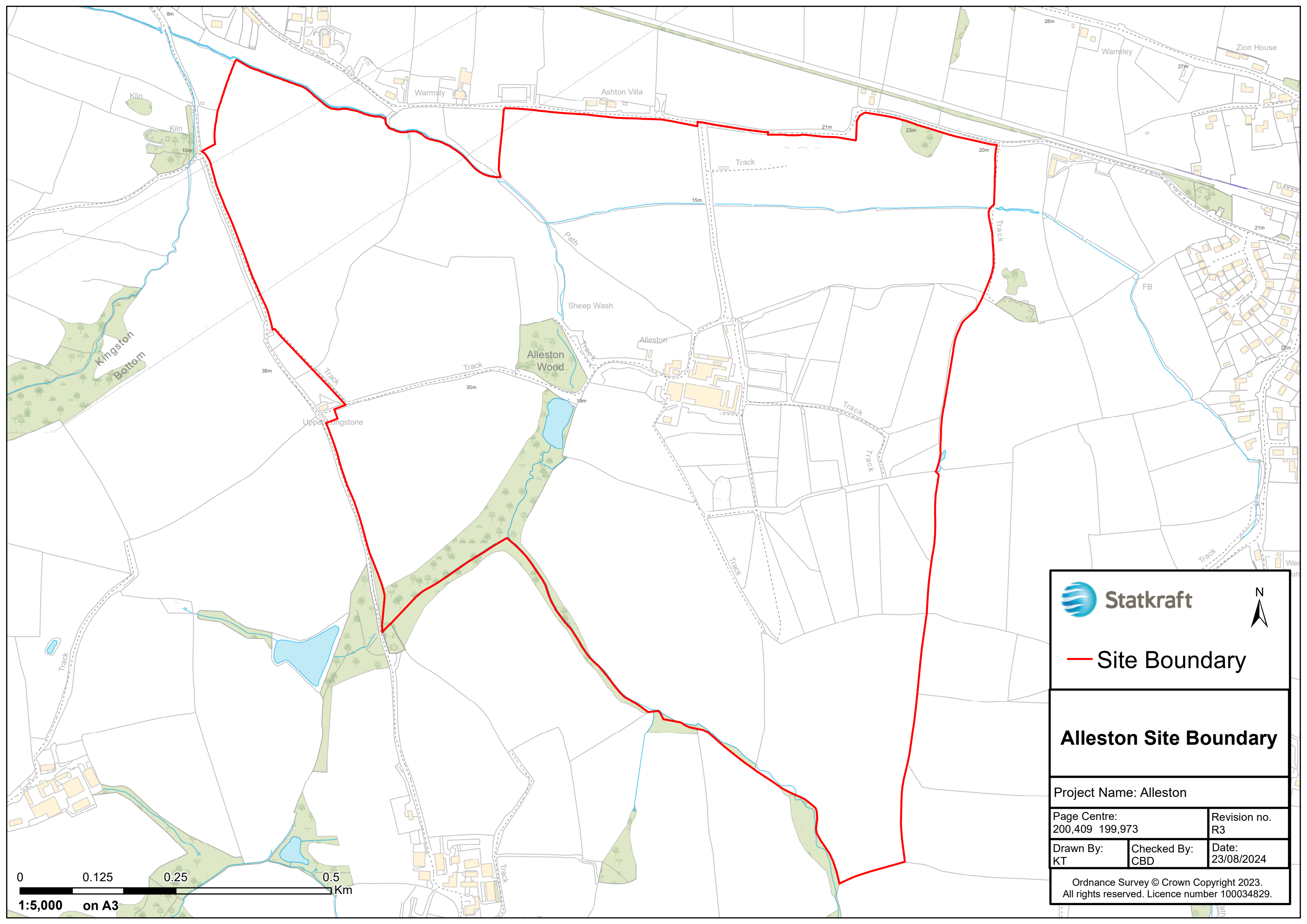
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<sup>i</sup> Appendix 2.5 Carbon Assessment. Stantec. May 2024.


<sup>ii</sup> Available at: <https://flood-risk-maps.naturalresources.wales/?locale=en>

<sup>iii</sup> Designing for Renewable Energy in Wales. Available from:  
<https://www.gov.wales/sites/default/files/publications/2023-12/designing-for-renewable-energy-in-wales.pdf>

# Appendix A Site Location Plan



 **Statkraft** 

 **Site Boundary**

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**Alleston Site Boundary**

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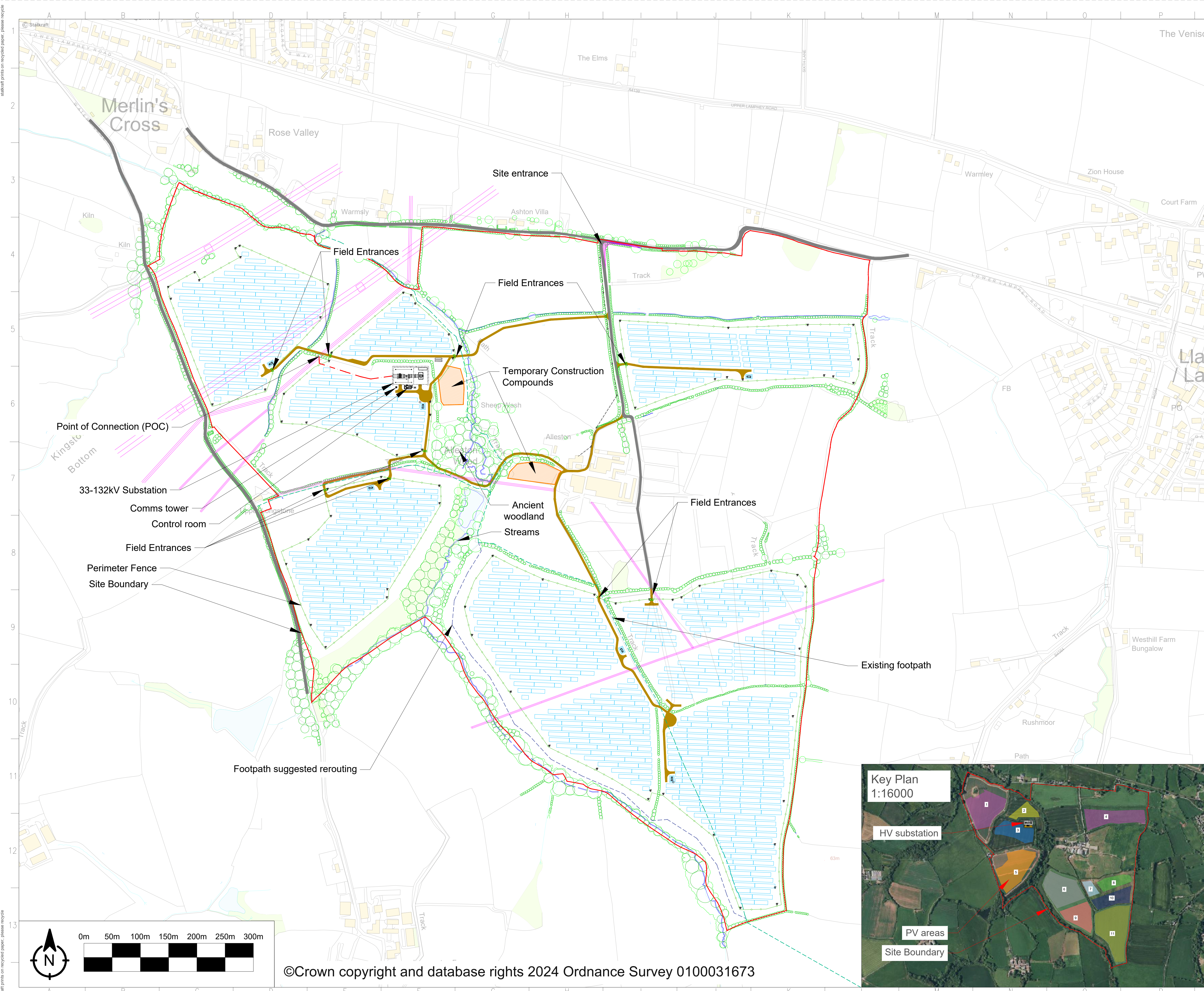
Project Name: Alleston

Page Centre: 200,409 199,973	Revision no. R3	
Drawn By: KT	Checked By: CBD	Date: 23/08/2024

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# Appendix B Site Layout Plan





REFERENCES	
SUMMARY NOTES	
1.	All dimensions are in 'mm' unless otherwise indicated.
2.	Any deviations to be recorded and communicated to Statkraft.
3.	The following ecological buffers have been applied:
3.1.	10m from hedgerows and ditches (and other watercourses)
3.2.	20m from ponds and woodland
3.3.	15m from mature trees

SYSTEM SUMMARY	
GEOGRAPHICAL COORDINATES	51.66454, -4.88828
LAND OWNERSHIP AREA (GROSS)	96.3 ha
FENCED PV AREA	39.9 ha
MAXIMUM GRID EXPORT CAPACITY	30 MW
PV MODULE TYPE	Crystalline
INVERTER TYPE	String
STRUCTURE TYPE	Fixed

LEGEND	
	Overhead Line (OHL)
	Perimeter Fence
	Site Boundary
	Telecommunications Line
	Existing Footpath
	Proposed Footpath
	Maintenance Track
	Existing Roads
	Trees
	Hedgerows
	Transformer Station
	PV Structure
	Gates
	Water Bodies
	Connection route
	CCTV Camera
	Weather station
	Transformer station excavation zone

PROPOSAL ONLY

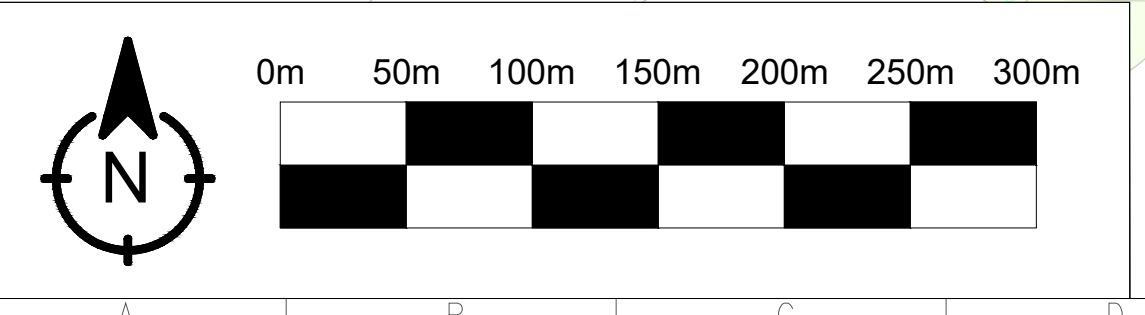
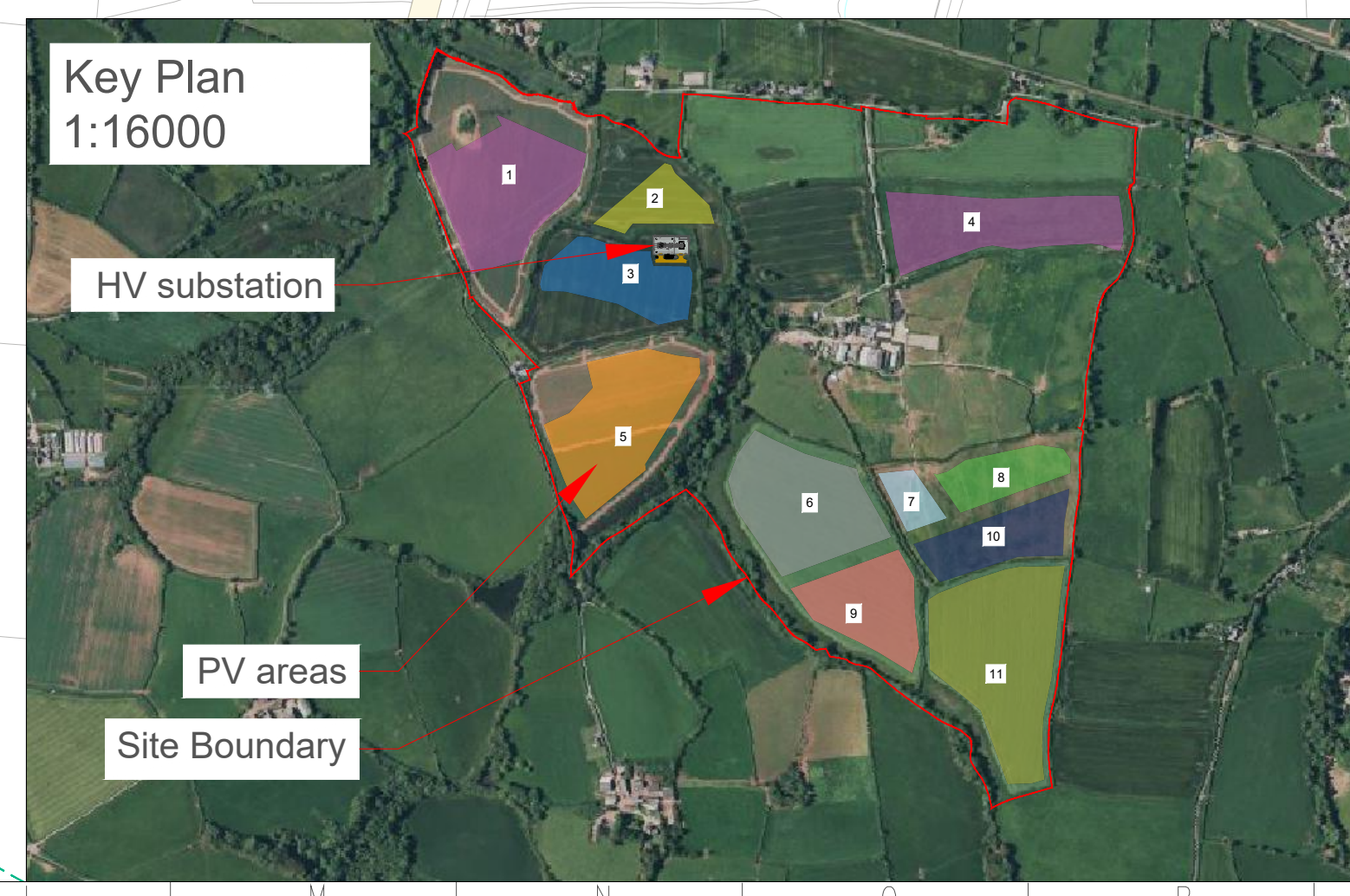


Main office in UK  
 19th Floor,  
 22 Bishopsgate,  
 London,  
 EC2N 4BQ  
 T +44 (0)20 7549 1000  
 info@statkraft.com  
 www.statkraft.com

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REV	DATE	DESCRIPTION	DRAWN	APPRV
K	23/08/2024	New NGED substation	PPH	AEP
J	19/07/2024	Minor update	PPH	AEP
I	16/07/2024	Major layout update	PPH	AEP
H	28/06/2024	Revised for archaeological data	PPH	AEP
G	03/06/2024	3P10, revised roads + fences	PPH	CRO

General PV Layout SCALE 1:3000 A1  
 SCUKX-ALLES-000-PVL-100.01K SHEET 1 of 1





## **Appendix C    Previous Site Layout Plan (November 2023)**