

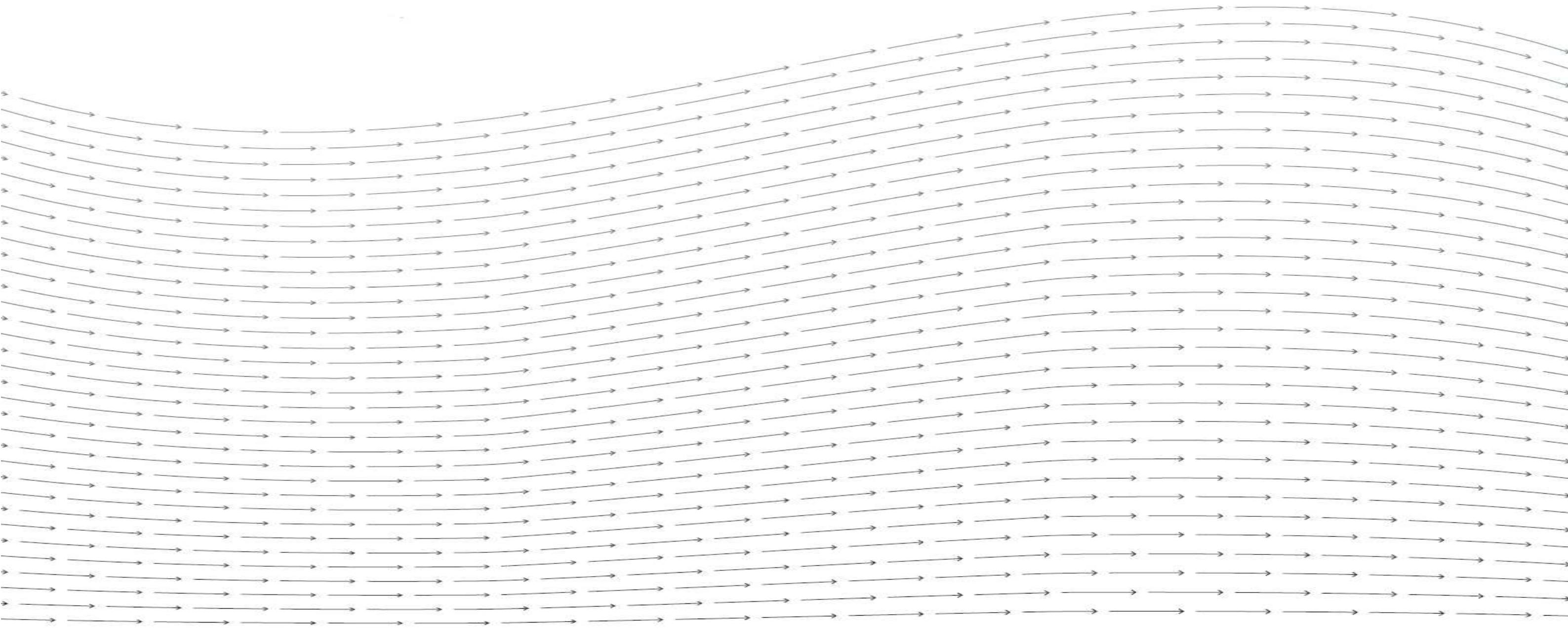
A green icon consisting of two right-pointing chevrons.

NEW RIDES SOLAR FARM

Design and Access Statement

Energiekontor UK Ltd

June 2021



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1 Introduction



Context

- 1.1 This Design and Access Statement has been prepared by Energiekontor UK Ltd ("the Applicant") to accompany a planning application to Swale Borough Council ("the Council") for the construction, up to 35 year operation and subsequent decommissioning of a solar farm, with a capacity of 10MWp, plus associated infrastructure ("the Proposed Development") at land within and adjacent to the operational New Rides Wind Farm, Eastchurch, Isle of Sheppey ("the Site").
- 1.2 This Design and Access Statement explains the design rationale behind the layout, providing an explanation of the design principles and concepts that have informed the Proposed Development and how transport and access issues have been taken into consideration.

The Applicant

- 1.3 Energiekontor UK Ltd is a renewable energy development company with offices in Leeds, Glasgow and Edinburgh. The company was formed in 1999 and develops wind farms throughout the United Kingdom. The company has built seven wind farms in the UK with many more in the development process.

- 1.4 EK is part of the Energiekontor Group. The parent company, Energiekontor AG, was established in 1990 in Bremerhaven in Northern Germany. It has since grown to become one of the leading wind energy companies in Europe, having built more than 100 wind farms across the continent.

- 1.5 In addition to our experience in wind energy, Energiekontor expanded to include solar power in 2010 and has since constructed 90MW of solar capacity, with a further 200MW in development. Energiekontor aims to use this experience to expand our solar development portfolio into the UK.

Methodology

- 1.6 The process involved in formulating the design of the Proposed Development has been led by a combination of environmental design and engineering requirements. The aim has been to arrive at an appropriate layout in terms of energy yield whilst seeking to avoid or reduce environmental effects.
- 1.7 The Design and Access Statement is seen as having an important role in contributing to the design process through the clear documentation of design evolution.
- 1.8 Solar farms are a sustainable form of development and the potential environmental effects are usually associated with the construction period and the temporary effects during the operational period of solar panels on landscape and visual amenity. The Proposed Development has therefore been developed with environmental considerations at the forefront of both site selection and site design.

The Application

- 1.9 The New Rides Solar Farm planning application is submitted in full and in addition to this Design and Access Statement is accompanied by the following documents which should be read together:

- Application Forms;
- A number of environmental report and surveys:
 - Landscape and Visual Assessment;
 - Glint and Glare Assessment;
 - Archaeology Assessment;
 - Flood Risk Assessment;
 - Ecological Assessment Report; and
 - Agricultural Land Classification Survey.
- Planning and Energy Statement; and
- Statement of Community Involvement.

2 Site Selection



Introduction

2.1 This section of the Design and Access Statement describes the Site and the surrounding area before setting out the approach to site selection.

The Site

2.2 The site is located approximately 1km south of the village of Eastchurch on the Isle of Sheppey, Kent (the "Site") – see Figure 2.1. The Site consists of agricultural land situated within and adjacent to the operational New Rides Wind Farm development. To the west of the Site lies the Sheppey Prison Cluster, made up of HMP Swaleside, HMP Elmley and HMP Stanford Hill. To the south lies marshland associated with the river Swale and the Eastchurch Marshes, whilst to the east of the Site there is an existing solar farm associated with Old Rides Farm.

Site Selection Criteria

- 2.3 The overall approach to solar farm site selection is to identify areas of land where the siting of a solar farm would result in minimal environmental effects, be free from overriding technical constraint and be viable on an economic basis. Some of these are considered below.
- 2.4 Given that Energiekontor currently owns and operates the New Rides Wind Farm, Energiekontor explored the prospect of co-locating solar and the possible efficiencies of doing so.

Review of Planning Context

2.5 Information on the planning context for renewables in Swale Borough Council was reviewed as part of the site search exercise, focusing on the relevant Development Plans, national policy and other relevant material considerations.



Figure 2.1: Site Location

Access Suitability

2.6 Access to the Site would be via the existing access for New Rides Farm and New Rides Wind Farm, off the B2231. Due to component size, access requirements for the proposed solar farm are not expected to be any greater than those for the wind farm.

Grid Connection

2.7 The potential to connect the solar farm into the electricity network was also an important consideration in identifying suitable sites for solar farm development. The capacity of the local grid network to accept the likely output from the proposed solar farm is critical to the technical feasibility of a development. The solar farm would make use of the existing wind farm grid connection, as such no off-site construction works will be required.

Irradiation Levels

2.8 Site selection for solar development is heavily influenced by the local irradiation levels. Irradiation levels tend to be higher in southern England compared to the rest of the UK, particularly in coastal locations, and the solar data indicates that this Site has a favourable solar resource.



3 Design Influences



Introduction

- 3.1 Once a site has been selected, the design of the solar farm is optimised in order to produce a layout which maximises the use of land available for power generation, balancing this against the overall environmental, social and economic effects of the development. Optimising the layout of a solar farm in this way depends on a range of technical, economic, planning and environmental criteria.

Design Criteria

- 3.2 Technical requirements and constraints are parameters that can physically constrain solar farm design. For the Proposed Development these have included:
- **Energy capture** – the solar data indicates that the Site has a favourable solar resource.
 - **Land availability** – as agreed with the landowner, the land available for solar development.
 - **Grid constraints** – what available capacity can the grid take in the area.
 - **Turbine overshadowing** – given that the solar farm will be sited within and adjacent to an existing wind farm, areas of potential shadow caused from the turbines are to be avoided where possible.
- 3.3 In addition to the technical requirements and constraints, a range of environmental considerations have also had an influence on the design of the solar farm. These include:

- **Landscape and visual** – Care has been taken to retain existing trees/hedgerows and provide additional planting where possible, to retain and reinforce the existing landscape framework and character of the local area, as well as maintain existing visual buffers.
- **Access** – A public right of way (ZS46) is present on the southern part of the Site. This has been assessed as part of the landscape and visual assessment that notes the Proposed Development would be seen in the context of existing solar and wind developments.
- **Ecology** – the layout of the Proposed Development takes account of the ecological interests of the Site and the surrounding area, as well as the habitat management linked to the existing wind farm.
- **Archaeology** – all on-site archaeological features have been plotted, assessed and avoided as far as possible.
- **Residential Properties** – the Proposed Development has been designed to ensure that no residential properties would experience unacceptable amenity effects, either as a result of visual dominance or noise.
- **Hydrology** – any watercourses within the Site have been considered in the design.

Planning Policy

- 3.4 As set out in Planning Statement, a wide range of national, regional and local planning and renewable energy policy

has been taken into account in the design of the Proposed Development. Additional details are set out in the individual Environmental Report and the Planning and Energy Statement.

Design Guidance

- 3.5 The design of the Proposed Development has taken into account a number of best practice documents in relation to solar farm design. In addition to taking cognisance of the suite of planning guidance discussed in the Planning and Energy Statement, the following documents are of particular relevance to the design of the Proposed Development:

- Renewable Energy Planning Guidance Note 2, The Development of Large Scale (>50kW) Solar Arrays, Swale Borough Council (2014).

Design Consultation

- 3.6 The Applicant has undertaken pre-application consultation prior to the submission of this planning application to allow the local community to have an influence over the evolution of the design. Given the current restrictions on public gatherings due to the COVID-19 crisis, public consultation was conducted through other means, including online. Details of the consultation are included in the Statement of Community Involvement.

4 Design Evolution, Amount, Layout and Scale



Constraints Mapping

- 4.1 The starting point for the design of a solar farm is the preparation of a detailed constraints map which sets out all relevant buffer distances, key features and other factors that may constraint the location of solar panels.
- 4.2 The evolution of the design has as such been informed by matters including standoff distances to residential properties, ecological designations and archaeological and hydrological buffers.

Technical Constraints

- 4.3 The following technical considerations were also taken into account in the design process:
- Distance between rows of solar panels;
 - Height of solar panels;
 - Tilt of solar panels;
 - Distance from residential properties; and
 - Turbine overshadowing.

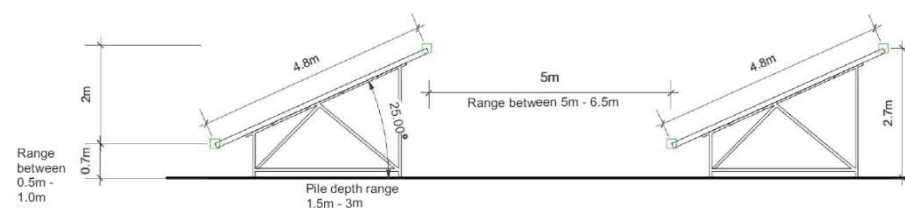


Figure 4.1: Indicative Solar Panel Cross-section

Relevant Planning Policies

- 4.4 The relevant policies identified in the Planning and Energy Statement have been taken into consideration in the site selection process and also subsequently, where relevant, in the design of the Proposed Development.

Public Consultation

- 4.5 The consultation process is detailed in section 3.

Landscape and Visual

- 4.6 The principal landscape and visual design objectives of the Proposed Development are as follows:
- Achieve a simple, balanced, coherent and concentrated design when viewed in the local and wider landscape;
 - Minimise landscape and visual effects on views from local residential properties and communities; and
 - Minimise landscape and visual effects from main transport routes.
- 4.7 In addition, mitigation has been proposed as part of a landscape masterplan, to protect and enhance existing screening.

Glint and Glare

- 4.8 Similar to Landscape and Visual consideration was given to possible glint and glare effects to surrounding road users and dwellings. An assessment concluded no significant impacts, and mitigation is therefore not required.

Land Use

- 4.9 Consideration has been given to minimise and/or avoid areas of high quality agricultural land.
- 4.10 Further details are provided in the Agricultural Land Classification Survey Report.

Noise

- 4.11 Solar farms are passive and do not include moving parts that generate noise. Concerns can sometimes be raised regarding noise from the cooling fans of the inverters required on-site, however these are housed within cabinets which deaden the noise to a very low level. As such, no detrimental effects to residential amenity are predicted.

Ecology and Ornithology

- 4.12 The Site is not the subject of any statutory nature conservation designations, An Ecological Assessment has been undertaken which has allowed the layout to be designed around local sensitivities.
- 4.13 Further details are provided in the Ecological Assessment Report.

Flood Risk

- 4.14 Consideration was given to siting of infrastructure to minimise potential flood risk.
- 4.15 Further details provided in the Flood Risk Assessment.

Archaeology and Cultural Heritage

- 4.16 There are no statutorily designated cultural heritage assets within the Site and no direct impacts have therefore been identified during the design process. Only one Scheduled Monument is located within 3km and the Proposed Development was assessed as having no effect on its setting.
- 4.17 Only one non-designated asset was identified within the Site. This asset has been avoided with a suitable buffer distance applied to it in the final design of the Proposed Development to minimise any direct effects.
- 4.18 Further details are provided in the Archaeology Assessment.

Design Iterations

- 4.19 The design process has been undertaken over a prolonged period and the proposal has been progressively revised and refined during this time to take account of the information arising from the findings of various environmental and technical assessments.
- 4.20 Details of some of the key iterations of this design process are outlined below.

First Design Iteration

- 4.21 An initial layout was prepared for EIA Screening. The first iteration comprised a panelled area of approximately 11ha, with a proposed capacity of 13MWp. This layout was split into three distinct areas around the Site, with the spacing between the areas dictated by turbine shadowing considerations.

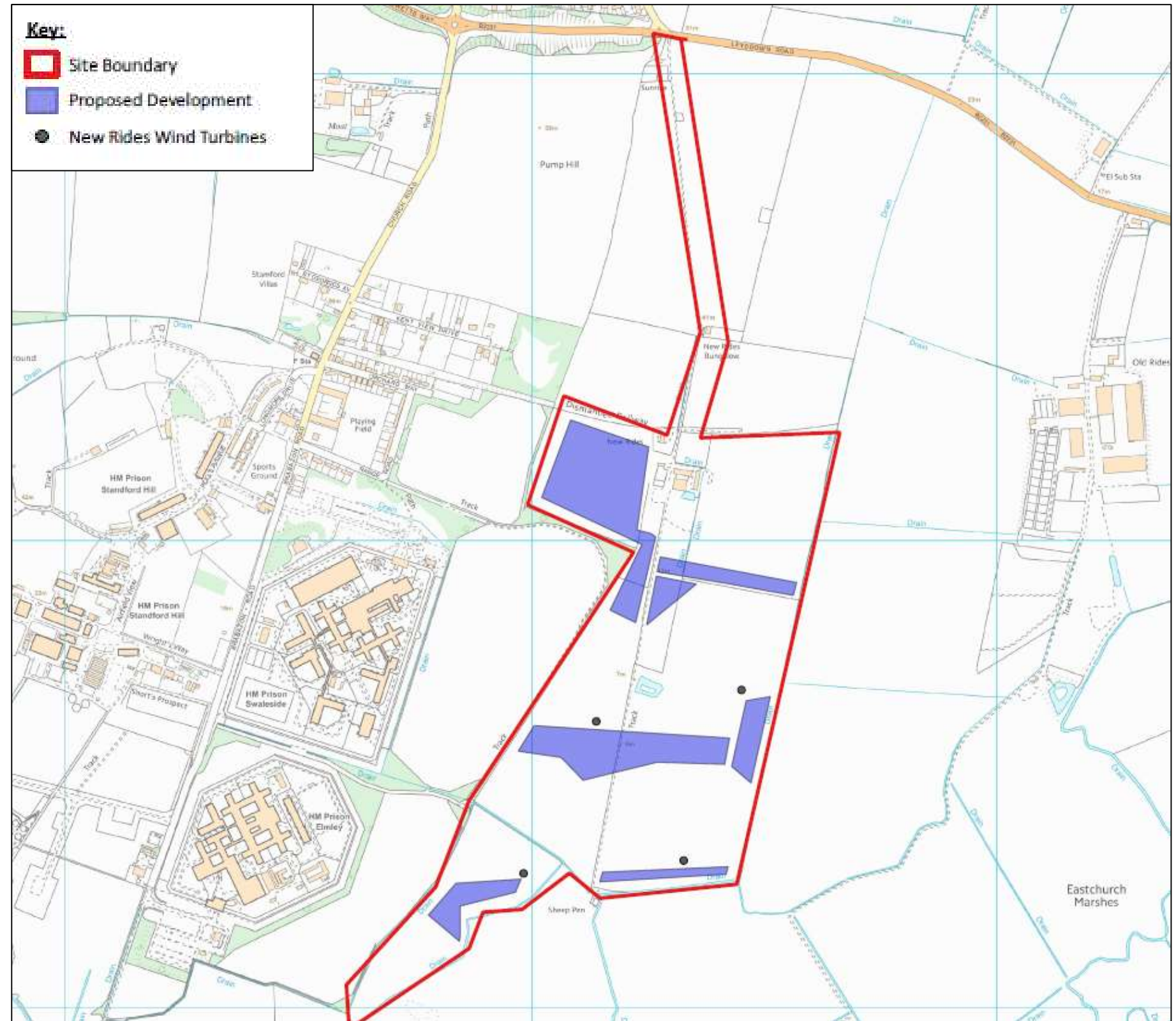


Figure 4.2: First Design Iteration

Second Design Iteration

4.22 The second design iteration made use of the field in the northeast corner of the Site and reduced the number of separate panelled areas. The following design principles were adopted:

- Solar panel areas to be less fragmented;
- Reduce the amount of infrastructure sited in Flood Zones 2 and 3; and
- Solar panels to be more concentrated in the north of the Site.

4.23 The second iteration comprises a panelled area of approximately 15ha, providing 13MWp of capacity.

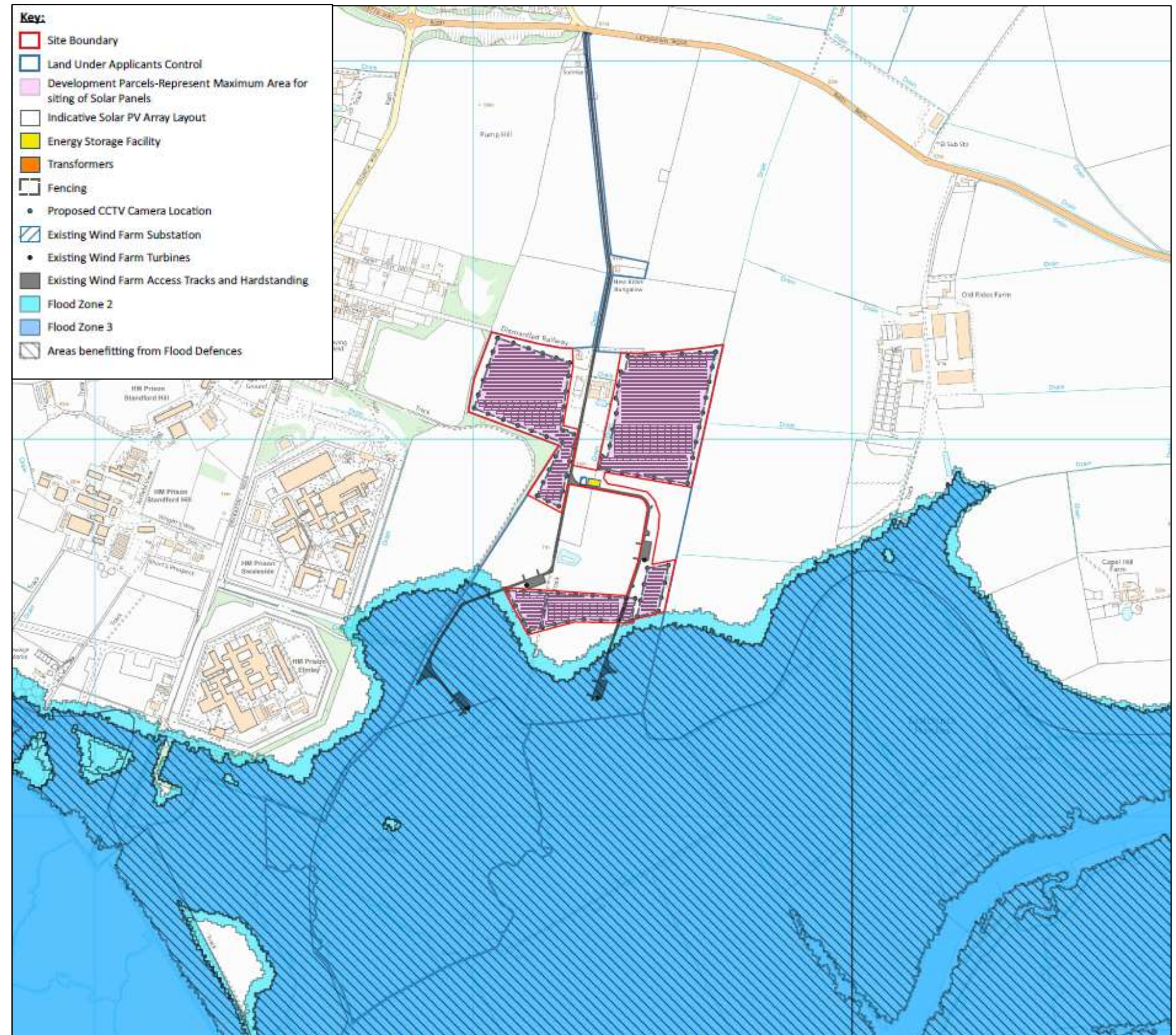


Figure 4.3: Second Design Iteration

Final Design

- 4.24 The final design has been reduced from 13MWp to 10MWp with the panels consolidated into the northern parts of the Site to reduce the fragmented nature of earlier designs. The proposed Energy Storage Facility has also been removed.
- 4.25 The final design also takes into consideration an on-site non-designated cultural heritage asset, identified following a site visit. A suitable buffer has been applied to minimise any direct effects
- 4.26 The final design comprises a panelled area of approximately 12.3ha, within a Site Boundary of approximately 16.5ha.

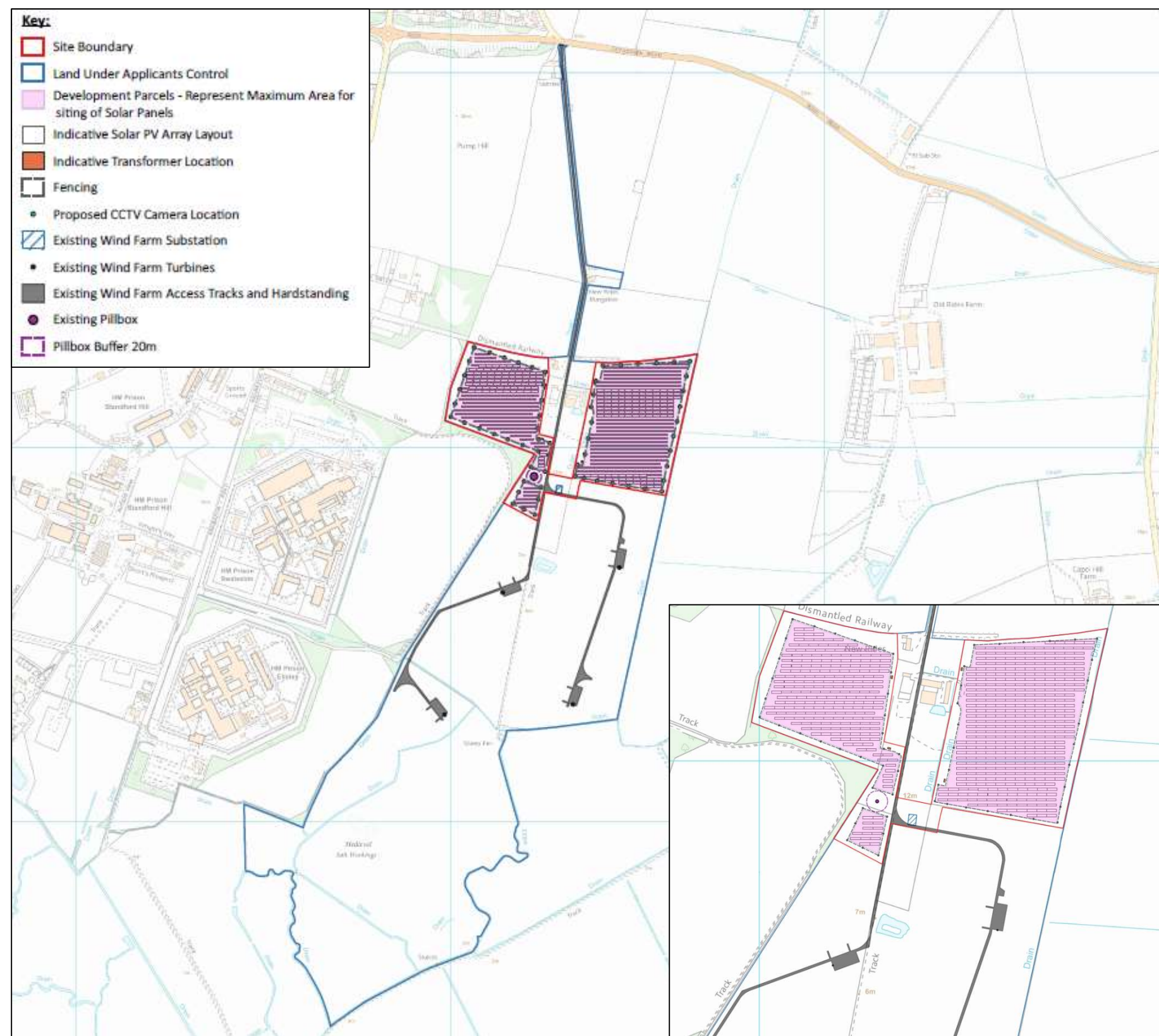


Figure 4.4: Final Design

5 Design of the Proposal



Introduction

- 5.1 The proposal is for the development of a solar farm at Energiekontor's operational New Rides Wind Farm.
- 5.2 The Proposed Development would involve erection of solar panels on approximately 12.3ha of agricultural land, within a Site Boundary of approximately 16.5ha.
- 5.3 The solar farm would have a generating capacity of up to 10MWp, although this could be lower depending on the final solar panel selection. This would be made following the grant of planning permission and be subject to a competitive tendering exercise.
- 5.4 The solar farm would also include associated infrastructure including: transformers/inverters, CCTV and deer fencing.
- 5.5 The Proposed Development would be operational for a period of up to 35 years, after which the solar panels and associated infrastructure would be removed and the site restored.
- 5.6 It is possible that there may be a requirement for micro-siting of some infrastructure following ground investigations and any other pre-construction environmental surveys.

Key Elements of the Proposal

- 5.7 The principal elements of the Proposed Development include:
- **Solar Panels** – Photovoltaic (PV) arrays, covering approximately 12.3ha;
 - **Transformers/inverters** – A number of transformer and inverter substations at various locations around the

arrays within a 6m x 2.5m x 3m high cabinet on a concrete plinth;

- **Fencing** – Boundary fencing (e.g. deer fencing) around the edge of the proposed panelled area, with access gates and small mammal gates;
- **CCTV** – A CCTV system, either pole or fence-mounted, located at strategic points around the panelled area.

- 5.8 indicative design drawings of the above are provided in Appendix 1.

Solar Panels

- 5.9 It is proposed to erect approximately 12.3ha of PV arrays on Site. They would be based on a simple metal framework, pile driven into the ground, avoiding the need for substantive foundations, up to a maximum height of 3m (see Appendix 1).

Associated Development

- 5.10 The solar farm would make use of the existing wind farm grid connection, as such no off-site construction works will be required.

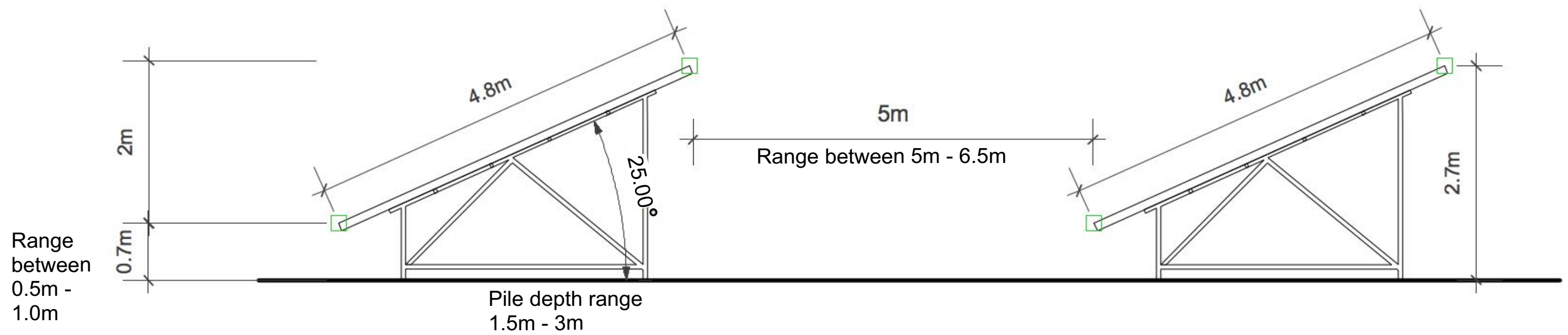
Access

- 5.11 The solar farm would use the existing site tracks and access for New Rides Farm and New Rides Wind Farm off the B2231. As this access was designed and appropriate for large wind turbine blades, it is considered appropriate for much smaller solar farm components.
- 5.12 The main transport movements during the construction phase would be associated with the movements of Heavy Goods Vehicles (HGVs) to and from the Site. Vehicle movements would be associated with the delivery of PV

panels, components, and the travel of workers to and from the Site.

- 5.13 Once the development is operational, it is envisaged that the amount of traffic would be minimal. Occasional visits may be made to the Site for maintenance activities. The vehicles used for these visits are likely to be a 4x4 or similar and there may be occasional need for a HGV to access the Site for maintenance and repairs.

Appendix 1 – Indicative Design Drawings



All dimensions are indicative only
Foundations to engineers specification

Typical Panel Detail New Rides Solar Farm

Client: EnergieKontor

DRWG No: **P20-3549_104**

Drawn by : TH

Date: 27/01/2021

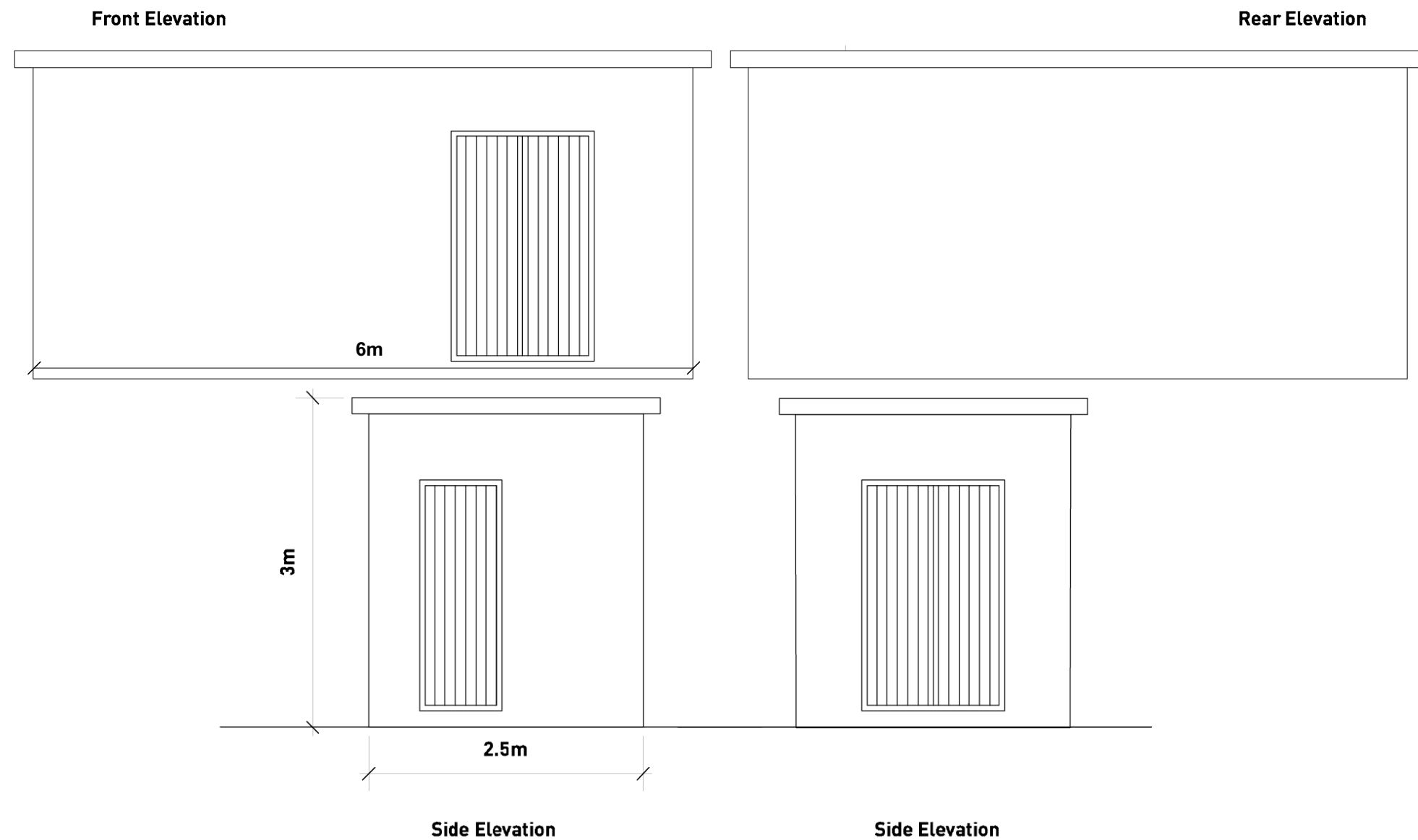
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Approved by: HS

Pegasus
Environment

Revisions:
First Issue- 27/01/2021



All dimensions are indicative only
Foundations to engineers specification

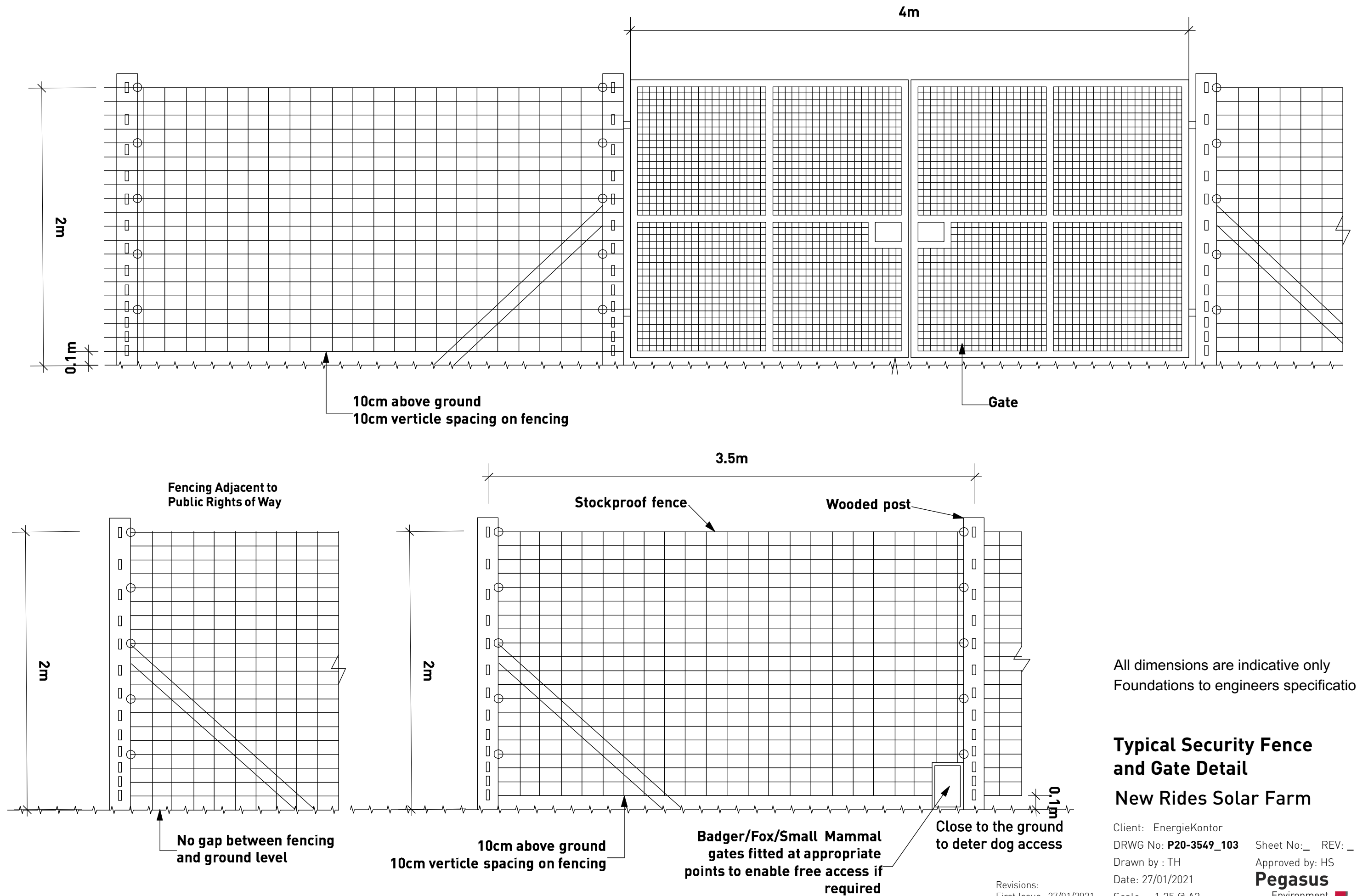
Typical Transformer Inverter Detail New Rides Solar Farm

Client: EnergieKontor
 DRWG No: **P20-3549_101** Sheet No: _ REV: _
 Drawn by : TH Approved by: HS
 Date: 27/01/2021
 Scale: 1:50 @ A3

Revisions:
First Issue- 27/01/2021

EnergieKontor

Pegasus
Environment



All dimensions are indicative only
Foundations to engineers specification

Typical Security Fence and Gate Detail

New Rides Solar Farm

Client: EnergieKontor

DRWG No: P20-3549_103

Drawn by : TH

Date: 27/01/2021

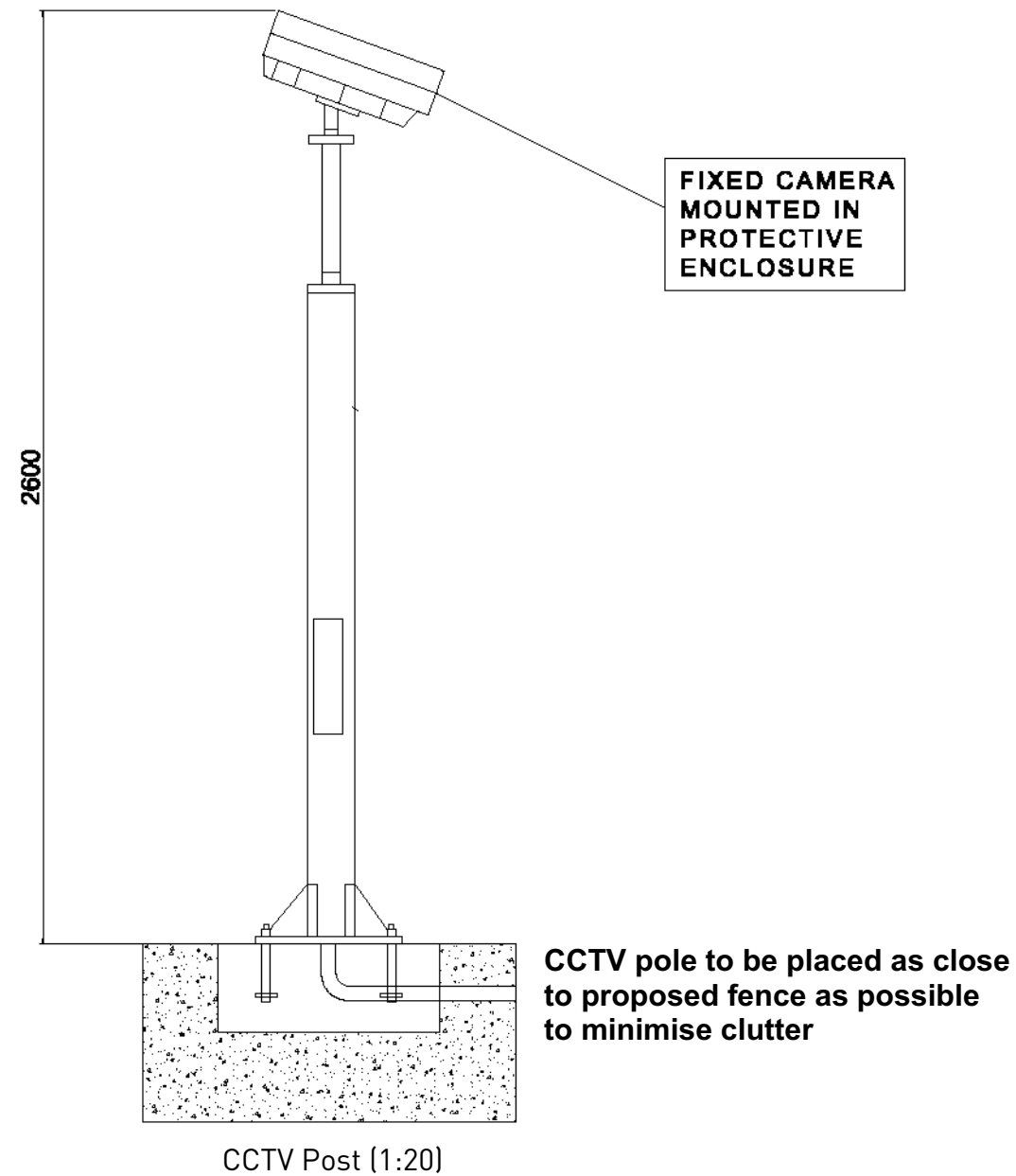
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Environment

Revisions:
First Issue- 27/01/2021



All dimensions are indicative only
Foundations to engineers specification

Typical Post Mounted CCTV Detail

New Rides Solar Farm

Client: EnergieKontor

DRWG No: **P20-3549_102**

Drawn by : TH

Date: 27/01/2021

Scale: As noted @ A3

Sheet No: _ REV: _

Approved by: HS

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