

**FLOOD RISK ASSESSMENT FOR A PROPOSED  
SOLAR FARM EXTENSION  
DUNS TEW, OXFORDSHIRE**

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**Report prepared for:**

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### GENERAL NOTES

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Site: Duns Tew Solar Farm, Oxfordshire  
Report ref: 2640/FRA  
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## 1 INTRODUCTION

### 1.1 Background

A Planning Application is being prepared for the extension of an existing solar array at Hill Farm near Duns Tew, Oxfordshire. The application boundary ('the Site') is shown on Drawing 2640/FRA/01 (Appendix 2640/FRA/A1). Planning permission was granted for the existing Hill Farm solar array by Cherwell District Council on 16<sup>th</sup> October 2015.

Hafren Water has been commissioned to carry out a Flood Risk Assessment (FRA) for the proposed extension. This has been carried out in accordance with the National Planning Policy Framework (NPPF) and Planning Policy Guidance (PPG). Potential impacts have been identified and mitigation measures proposed, where necessary.

### 1.2 Data sources

The following data sources were used in this FRA:

IPV Flexgen

- Site boundary and description

Ordnance Survey (OS)

- 1:25,000 and 1:50,000 series mapping

British Geological Survey (BGS)

- Geology viewer (BGS website) and Webmap Service

Cranfield Soil and Agrifood Institute (landis.org.uk website)

- Soils map

Environment Agency (EA)

- Flood Risk Mapping

Oxfordshire County Council

- Preliminary Flood Risk Assessment, 2011
- Solar Farm Position document, Nov 2014

Cherwell District Council (CDC)

- Cherwell Local Plan, 2015
- Strategic Flood Risk Assessment (SFRA) Level 1, May 2017
- Strategic Flood Risk Assessment (SFRA) Level 2, 2017

### **1.3 National Planning Policy Framework and Planning Practice Guidance**

This FRA has been undertaken with regard to the statutory requirements of the National Planning Policy Framework (NPPF) and with reference to Planning Practice Guidance (PPG) in relation to development and flood risk. The latter ensures that flood risk is taken into account at all stages of the planning process and to avoid inappropriate development in areas potentially at risk of flooding.

The PPG does not specifically classify the flood risk vulnerability of solar arrays. It is considered that solar farms are 'less vulnerable' developments, where they are not associated with an electrical substation.

### **1.4 Local policy**

The Local Planning Authority and Lead Local Flood Authority is Oxfordshire County Council.

In agreement with the PPG, Oxfordshire County Council Preliminary Flood Risk Assessment Report (PFRA) (2011) states that new development within Oxfordshire must not increase flood risk on the local scale (Section 5.7.15). However, should the Oxfordshire County Council find that the benefits of the development outweigh the potential increase in local flood risk, it may be permitted as long as the increased flood risk is not considered to be significant.

In addition to the PFRA (Oxfordshire County Council, 2011), the Council has also outlined their policy specifically as it pertains to the development of ground-mounted Solar PV Arrays (Oxfordshire County Council, 2014). Section 45 of this document defines solar farms as 'less vulnerable development under the PPG flood risk vulnerability classification (Table 2). This allows development in Flood Zones 2 and 3a; however, placement of solar farms within these areas is subject to the Sequential and Exception Tests, as well as considerations of surface water run-off and future flood risk as a result of the development (Section 46).

The Cherwell District SFRA Level 1 (CDC, 2017) references both national and local policies. This includes the following policies from the Cherwell Local Plan 2011-2031 (2015) which restate national guidance regarding the requirement for site specific flood risk assessments and consideration of all sources of flooding, climate change and use of SuDS:

Policy PSD 1: Presumption in Favour of Sustainable Development

Policy ESD 1: Mitigating and Adapting to Climate Change

Policy ESD 6: Sustainable Flood Risk Management

### Policy ESD 7: Sustainable Drainage Systems (SuDS)

The Cherwell District SFRA also sets out five flood risk management objectives to aid the policy making process. These include discouragement of development within Flood Zones 2 and 3; use of SuDS to reduce runoff from development sites to greenfield rates less 20%; maintenance of an 8m buffer from Main rivers and a 5m buffer from ordinary watercourses. It also recommends that a sequential approach should be applied within development sites to locate the most vulnerable elements in the lowest risk areas.

The SFRA also requires that developments remain consistent with national and local SuDS policies. Therefore, drainage systems should be designed so that flooding does not occur on any part of a site during a 1 in 30-year rainfall event; also that flooding does not occur within any structure susceptible to water (such as electrical invertors) during a 1 in 100-year rainfall event, and that rainfall in excess of a 1 in 100-year event is managed to minimise risks to people and property.

### **1.5 Regulatory requirement for this assessment**

The Site is located mainly within the Environment Agency's indicative Flood Zone 1, where the probability of fluvial flooding in any one year is <0.1% Annual Exceedance Probability (AEP). Small areas of the Site closest to Deddington Brook are located in Flood Zone 3, denoting a 1% or greater AEP of fluvial flooding in a given year. Due to the Site's location, and its area exceeding 1 hectare (ha), a Flood Risk Assessment (FRA) is required in accordance with the Planning Practice Guidance (PPG) and the Environment Agency's Flood Risk Standing Advice for Local Planning Authorities (Version 3.1).

## 2 BASELINE CONDITIONS

### 2.1 Location and setting

The proposed extension to the existing Hill Farm Solar Array will involve an area of 12.82 ha of which the majority will accommodate solar panels. The centre of the Site is located at National Grid Reference (NGR) SP 4595 3001, some 1.5 km north of the village of Duns Tew, Oxfordshire, and approximately 1.6 km southwest of the village of Deddington. The nearest main road is the A4260, 0.58 km to the east.

The Site and surrounding land is currently used for agriculture (aside from the fields to the west, which comprise the existing solar array). The Site is bounded to the north by Deddington Brook. To the southwest, adjacent to the current solar array, is a small woodland approximately 6.5 ha in area. The nearest statutory site is the Horsehay Quarries SSSI, located ~2.4 km to the south. Additional local SSSIs include the Middle Barton Fen 3 km to the south, and Bestmoor 3.3 km to the east.

The Site location and its boundary are shown on *Drawing 2640/FRA/01*.

### 2.2 Topography

The Site is located on gently sloping land, with a northeastwards decrease in elevation towards Deddington Brook. The southern boundary of the Site lies at approximately 92 metres Above Ordnance Datum (mAOD), while the northern boundary closest to Deddington Brook is lower, at between 85 mAOD (eastern boundary) and 87 mAOD (western boundary).

### 2.3 Water features

The characteristics of the hydrology of the Site and its environs are derived from Ordnance Survey maps.

There is no evidence of permanent watercourses or waterbodies being present within the Site.

The nearest watercourse is Deddington Brook, located adjacent to the northern boundary of the Site. This watercourse is designated as a Main River by the Environment Agency and flows eastwards towards the River Cherwell. Other water features comprise an ordinary watercourse located 600 m to the southeast and south of Hill Farm, which flows into Deddington Brook at a point over 800m downstream of the Site; also an ordinary watercourse on the north bank and agricultural drain on the south bank which flow into Deddington Brook at locations over 800m to the west and upstream of the Site boundary.

The nearest waterbodies on surrounding land are a small pond approximately 290 m west and upstream of the Site boundary, which is located near the northern bank of Deddington Brook. Another smaller pool is located 1 km to the northwest.

## 2.4 Ground conditions

Bedrock beneath the Site comprises the Charmouth Mudstone Formation. This is a sedimentary deposit (British Geological Survey (BGS), 2019). There are no superficial deposits recorded for the Site.

The Charmouth Mudstone is classified by the Environment Agency as a Secondary (undifferentiated) Aquifer which represents *'cases where it has not been possible to attribute either category A or B to a rock type'*, where Category A is *'permeable strata capable of supporting water supplies at a local rather than strategic scale and in some cases forming an important source of base flow to rivers'* and Category B is *'predominantly lower permeability strata which may in part have the ability to store and yield limited amounts of groundwater by virtue of localised features such as fissures, thin permeable horizons and weathering.'*

No BGS borehole logs are available for areas within the immediate vicinity of the Site and therefore the depth to groundwater is unknown. Boreholes at distances of over 500m to the north, east and south of the Site exhibit thick clay horizons and do not mention water strikes during drilling.

According to the classifications given by the Cranfield National Soil Resources Institute, the predominant soil type on-site is *'slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils.'* This soil type is characterised by impeded drainage (Cranfield, 2019).

## 2.5 Proposed development

The Planning Application area is 12.82 ha. The majority of this area will contain ground-mounted photovoltaic (PV) panels mounted in rows on frames, and forming an extension to the existing Hill Farm Solar Array site to the west. A total of 26,236 modules are planned for the Site. The panels will have a ground clearance of 800mm and face due south with the rows aligned west-east. The proposed layout and design can be seen in *Appendix 2640/FRA/A1*.

The Site will contain six inverter / transformer sub-stations housed in shipping containers 8ft (2.43m) wide, 8.5ft (2.59m) high and either; 20ft (6.06m) or 40ft (12.2m) long. This represents a potential combined footprint of approximately 180 m<sup>2</sup>. Cables will be buried and the Site enclosed by a 2m high stock proof fence. The Site will be accessed from the west along an

existing track associated with the Hill Farm Solar Array and connecting with unsurfaced tracks inside the area.

A precautionary approach to the design of the Site has been taken. Therefore, the solar array incorporates a buffer zone of at least 8m from Deddington Brook in compliance with local planning policy and Environment Agency flood zone requirements. This zone will be free of solar panels and other infrastructure associated with the solar array excepting a stock proof fence (example shown in *Appendix 2640/FRA/A1*). Also, inverters/transformers will be positioned as far from the watercourse as practical and outside areas susceptible to surface water ponding. It is further recommended that floor levels are elevated above surrounding ground surfaces to further minimise the potential for surface water ingress. No concrete or hardstanding areas are planned.

### **3 APPROACH TO THE FLOOD RISK ASSESSMENT**

#### **3.1 Flood risk**

This FRA considers the likelihood of flooding, the associated hazards and the vulnerability of the flood receptor. These factors are combined to produce the single measure, 'flood risk'.

Requirements for the assessment of flood risk are addressed by due consideration of NPPF, PPG and prescribed components as required by the LLFA, Oxfordshire County Council.

#### **3.2 Flood receptors**

##### **3.2.1 Receptors internal to the Site**

The NPPF guidance does not specifically classify sites used for solar energy generation (Table 2: Flood Risk Vulnerability Classification); however, the Site is not intended for residential or emergency services, and the Oxfordshire County Council Solar Farm Position document (Nov 2014) considers such developments to have a 'less vulnerable' classification. The NPPF guidance recommends this land use classification as appropriate development within all flood zones, aside from the functional floodplain (Zone 3b).

The Site will contain six inverters/transformers which are water sensitive and can be considered to be a 'more vulnerable' component of the overall development.

##### **3.2.2 Receptors external to the Site**

The location of potential receptors can be seen on Drawing 2640/FRA/01.

The nearest residential property to the Site, Hill Farm, is located approximately 190 m to the south of the Site boundary at its closest approach. However, the farm is at a higher elevation than the Site and is therefore not a potential receptor. Other residential buildings in the surrounding area at Dane Hill, Lower Farm Cottages and Common Barn Farm are also at higher elevations.

An electrical sub-station is located 580m to the east and downstream of the Site boundary. The sub-station is located on the northern bank of Deddington Brook and is classed as 'essential infrastructure'. Other receptors include 'less vulnerable' agricultural land and the A4260 trunk road 580m to the east of the Site boundary.

#### **3.3 Design event and flood source**

As required by the NPPG, the return period to be considered for fluvial and rainfall events is 100 years and the effects of climate change need to be factored into the assessment as described in Section 3.4 of this report.

This FRA considers the following sources of flood risk, there being no reservoirs upstream of the Site:

- Fluvial (river) flow
- Pluvial (surface water) run-off
- Groundwater
- Sewer and/or water mains leakage

Pathways for flooding may involve two or more such components in sequence, such that the type of flow at the source is not the same as that delivering flooding to the receptor.

Within this FRA, flood risk to both internal and external receptors is assessed with reference to interactions between development at the Site and the sources of flooding listed above. For internal, but not external, receptors this gives information on the degree of flood hazard and hence the degree of flood risk. In the case of external receptors, flood hazard and hence flood risk during the design events is not evaluated. Instead the potential for the development to qualitatively increase or decrease flood risk at external receptors is assessed so that targeted measures to ensure a qualitative reduction can subsequently be taken, if necessary.

### 3.4 Climate Change

Within the UK, projections of future climate change indicate that there will be more frequent, short duration, high intensity rainfall events and periods of long duration rainfall. The NPPF recommends that the effects of climate change are incorporated into Flood Risk Assessments. Recommended precautionary sensitivity ranges for peak rainfall intensities and peak river flows are outlined in the Environment Agency document, 'Adapting to climate change: Advice for flood and coastal erosion risk management – authorities (April 2016) and are summarised in Table 2962/FRA/T1, below.

2962/FRA/T1: Recommended increases due to climate change			
Component	Years		
	'2020s' (2015 to 2039)	'2050s' (2040 to 2069)	'2080s' (2070 to 2115)
Peak rainfall intensity - Upper estimate	+10%	+20%	+40%
Peak rainfall intensity - Central estimate	+5%	+10%	+20%
peak river flow allowances- upper	+25%	+35%	+70%
peak river flow	+15%	+25%	+35%



allowances- higher15%			
peak river flow allowances- central	+10%	+15%	+25%

In line with Oxfordshire County Council policy the lifespan of the development is assumed to be 25 years. Therefore, given the development's 'low vulnerability' to flooding a climate change uplift in rainfall of 10% and river flow of 15% to 25% would be assumed if surface runoff calculations or river level modelling were required.

Given the absence of significant areas of impermeable surfaces within the proposed development surface runoff calculations have not been required.

In terms of fluvial (river) flood risk, CDC (Section 2.3, SFRA Level 2 May 2017) suggest that in the absence of detailed modelling of a 1 in 100-year (1% AEP) plus 20% climate change flood level, the 1 in 1,000 year (0.1% AEP) outline (boundary between Flood Zones 1 and 2) can be used as a proxy.

## 4 FLOOD RISK TO THE SITE

### 4.1 Fluvial flooding

The Environment Agency does not hold any record of river flooding at the Site (*Appendix 2640/FRA/A2*) and the CDC SFRA Level 1 (May 2017) contains no specific reference to historical flooding along Deddington Brook. Nevertheless, it is considered that the primary source of flood risk to the Site is fluvial (river) flooding from Deddington Brook.

Whilst areas near the northern boundary of the Site are shown by the Environment Agency's 'Flood Map for Planning' to be in Flood Zones 2 and 3 (*Drawing 2640/FRA/02*), these areas are not intended for development. The layout of the solar array will align with the boundary between Flood Zones 1 and 2 which is the limit of river flooding with a probability of less than 1 in 1,000 (0.1%) each year. Therefore, with the exception of a stock proof fence all infrastructure associated with the planning application will be located within Flood Zone 1.

Published Environment Agency flood zone boundaries for Deddington Brook are based on broad-scale modelling techniques. It is apparent that flood zone outlines do not align with the topography of Deddington Brook channel as represented by contours interpolated from LiDAR (*Drawing 2640/FRA/04*). This discrepancy appears to be most marked along the northern bank of Deddington Brook in the vicinity of the Site where the irregular shape of flood outlines does not match the channel or the contours marking the edge of the floodplain. Whilst flood outlines on the southern bank exhibit localised discrepancies with topography they are more closely aligned with the general shape of the channel and floodplain.

Following discussions with the Environment Agency in April 2020 it was agreed that the published flood outlines could be used to inform the layout of the solar array so long as solar panels remained outside of Flood Zones 2 and 3. This precautionary approach aligns with the outcome of a planning application for the existing Hill Farm solar array located immediately to the west of the Site. It also incorporates mitigation for the effects of climate change which are absent from published flood outlines. i.e. guidance provided by CDC (Section 2.3, SFRA Level 2 May 2017) states that in the absence of detailed modelling of a 1 in 100-year (1% AEP) plus 20% climate change flood level, the 1 in 1,000 year (0.1% AEP) outline (boundary between Flood Zones 1 and 2) can be used as a proxy. A climate change uplift of 20% is compatible with guidance values for this type of development and life span (Section 3.4).

Therefore, fluvial flood risk to the developed part of the Site is low and no mitigation is required other than the precautionary approach to the site layout mentioned above.

## **4.2 Surface water flooding**

Surface water flooding occurs when rainwater does not drain away through the normal drainage system or soak into the ground, but instead, lies on or flows over the ground. This can typically happen following high rainfall storm events.

The Environment Agency's mapping of 'Risk of Flooding from Surface Water' (*Drawing 2640/FRA/03*) shows that the majority of the Site has a very low risk (less than 0.1% probability in any year) of surface water flooding. Areas within Deddington Brook floodplain, where ground levels are flatter, together with a depression running south to north through the western part of the site have a higher risk of flooding, although this remains relatively small at between 0.1% and 1% probability. .

No mitigation is proposed other than the precautionary measures mentioned in Section 2.5 regarding the location of transformers/inverters.

## **4.3 Groundwater flooding**

The bedrock geology of the Mercia Mudstone Group is classified as a Secondary (undifferentiated) Aquifer. CDC SFRA Level 1, Appendix B, Figure B8 (May 2017) shows the area is not particularly susceptible to groundwater flooding with a less than 25% susceptibility rating. The logs of boreholes in the wider area indicate significant depths of clay material. .

The risk of groundwater flooding at the Site is considered to be 'low'.

## **4.4 Flooding from sewers and water mains**

Sewage and water mains are not considered to represent a risk to the Site, due to its rural location.

## **5 FLOOD RISK TO THE SURROUNDING AREA**

### **5.1 Sources of flood risk**

The main potential sources of flood risk from the Site to external receptors are as follows:

- i) Increased run-off due to changes in run-off characteristics of the Site
- ii) Loss of floodplain storage due to construction of above ground structures
- iii) Alteration of flood flow paths by construction of above ground structures

### **5.2 Surface runoff flood risk**

The construction of solar panels across the Site is unlikely to cause a significant change to the magnitude of surface run-off from the Site. Rainfall will drain from the panels onto natural ground, where it will either dissipate through infiltration or runoff to Deddington Brook. The footprint of six inverter/transformer shipping containers (typically 180 m<sup>2</sup>) is very small compared to the catchment that drains to Deddington Brook (25 km<sup>2</sup>). Any increase in runoff caused by the roofs of these shipping containers will have a negligible impact on flood risk to downstream receptors.

### **5.3 Fluvial flood risk**

The proposed development will not involve the construction of any above ground structures or ground re-profiling within the Deddington Brook floodplain and its margins (Flood Zones 2 and 3). Therefore, the development will not result in a loss of floodplain storage or an increase in fluvial flood risk to external areas as a consequence.

The proposed development will not create infrastructure within the floodplain or its margins (Flood Zones 2 and 3) excepting a stock proof fence. The stock proof fence will pass through the floodplain but due to its open construction is not expected to create a barrier or cause a significant change in flow paths. Therefore, the development is not expected to increase fluvial flood risk to external areas as a consequence.

## 6 FLOOD MITIGATION MEASURES

Table 2640/FRA/T1 shows potential combinations of flooding sources and receptors. It highlights those combinations that require mitigation in addition to the precautionary approach to the site layout mentioned in Sections 2.5 and 4.1.

2640/FRA/T1: Flood mechanisms requiring mitigation		
Flood mechanism	TO THE SITE (internal receptors)	FROM THE SITE (external receptors)
Fluvial	<b>Not required</b>	Not required
Surface water	<b>Not required</b>	Not Required
Groundwater	Not required	Not required
Sewer and/or mains-Derived	Not required	Not required

The primary source of flood risk to the Site is from Deddington Brook. A precautionary approach to the site layout has been taken. Therefore, with the exception of a stock proof fence, all infrastructure will be positioned in Flood Zone 1 and no mitigation for fluvial flood risk will be required.

Surface water flooding is currently localised to a few areas across the Site. As the PV arrays will be placed on ground-mounted frames with an 800mm ground clearance, surface water will not be a risk to the panels themselves. Inverters/transformers will be positioned away from localised depressions where water is liable to pond.

As no resurfacing of the Site is proposed and the footprint of shipping containers to house inverter/transformers will be small compared to the wider catchment of Deddington Brook and the distance to external receptors, it is not anticipated that internal drainage will significantly increase flood risk to external areas.

Other sources of flooding are not considered to be a significant risk.

## 7 ADHERENCE TO LOCAL POLICY OBJECTIVES

Oxfordshire County Council defines ground-mounted solar PV arrays as 'less vulnerable' development under the PPG flood risk vulnerability classification (Table 2). The proposed development is therefore suitable for placement in Flood Zones 1 to 3a according to this policy documentation.

The positioning of solar panels and inverters/transformers in Flood Zone 1 complies with the objectives set out in the Cherwell District SFRA which are:

- To discourage development from Flood Zones 2 and 3
- Maintain an 8m buffer from Main Rivers
- Adopt a sequential approach within development sites to locate the most vulnerable elements in the lowest risk areas.

The development also complies with Cherwell District Local Plan policies:

- Policy ESD 1: Mitigating and Adapting to Climate Change – by using Flood Zone 2 as a proxy for the 1%AEP climate changed event to position the solar array
  - Policy ESD 6: Sustainable Flood Risk Management – no significant or permanent change to ground cover and thus runoff
  - Policy ESD 7: Sustainable Drainage Systems (SuDS) - surface runoff will be dispersed to ground through natural infiltration
- .

## 8 SUMMARY AND CONCLUSION

The primary source of flood risk to the Site is fluvial (river flow) from Deddington Brook. Published Environment Agency flood mapping appears to be inaccurate along Deddington Brook in the vicinity of the Site, most notably along its northern bank. Whilst flood outlines on the southern bank adjacent to the Site exhibit localised discrepancies they are generally well aligned with the shape of the channel and floodplain. Following discussions with the Environment Agency in April 2020 it was agreed that the published flood outlines could be used to inform the layout of the solar array so long as all infrastructure remained outside of Flood Zones 2 and 3. The development's exclusion from Flood Zone 2 provides a proxy for the absence of specific information on the impact of climate change on the design flood level associated with a 1 in 100-year return period at the Site.

Flood risk to the Site from other sources, surface run-off, groundwater and sewer flooding are all considered of negligible or lower risk.

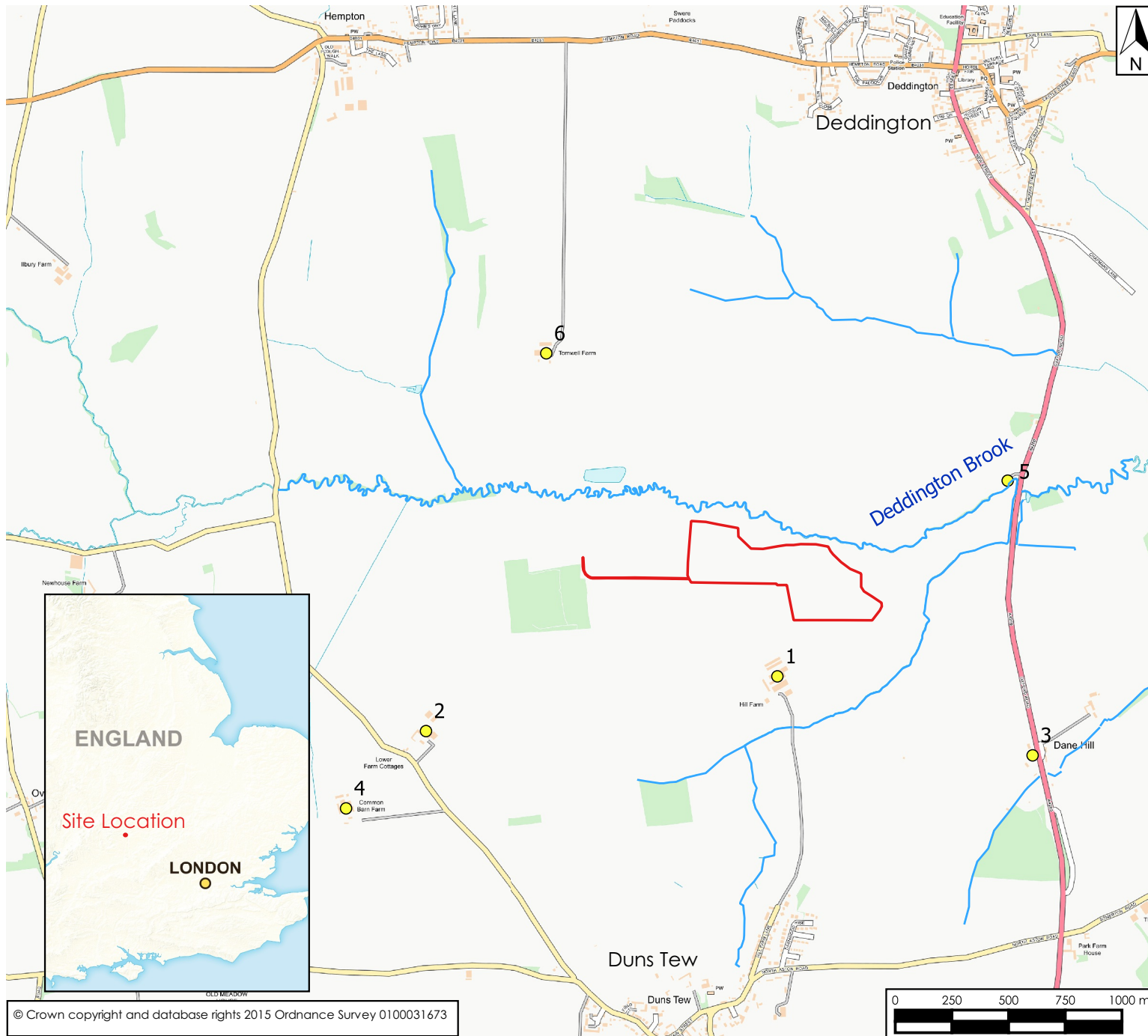
The development will not involve construction of hardstanding areas and the footprint of shipping containers to house inverters/transformers will be small relative to the surrounding area. Therefore, there will be no significant change to site run-off characteristics or loss of floodplain storage. The use of a stock proof fence is not expected to create a barrier to river flow or change flood flow pathways. Therefore, the development is not expected to cause a noticeable increase in flood risk to external areas.

The proposed development conforms to local planning policies regarding the layout and positioning of development relative to the floodplain and a buffer distance from the watercourse.

Therefore, it is considered that the proposed development, which adjoins an existing solar array immediately to the west, will not experience an unacceptable level of flood risk or cause a significant increase in flood risk to external areas.

## DRAWINGS





Legend

- Site Boundary
- Watercourses
- Potential Receptors
  - 1- Hill Farm
  - 2- Lower Farm
  - 3- Dane Hill
  - 4- Common Barn Farm
  - 5- Electrical Substation
  - 6- Tomwell Farm

Scale correct at A4

Client Greenheath NRG Ltd.,  
Toggam Farm,  
Newfen Grove Drove,  
Sedge Fen Road,  
Suffolk IP27 9LN

Title Site Location

Project Duns Tew Solar Farm

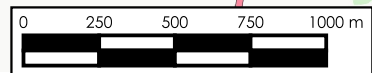
Drawing 2640/FRA/01 Version 1

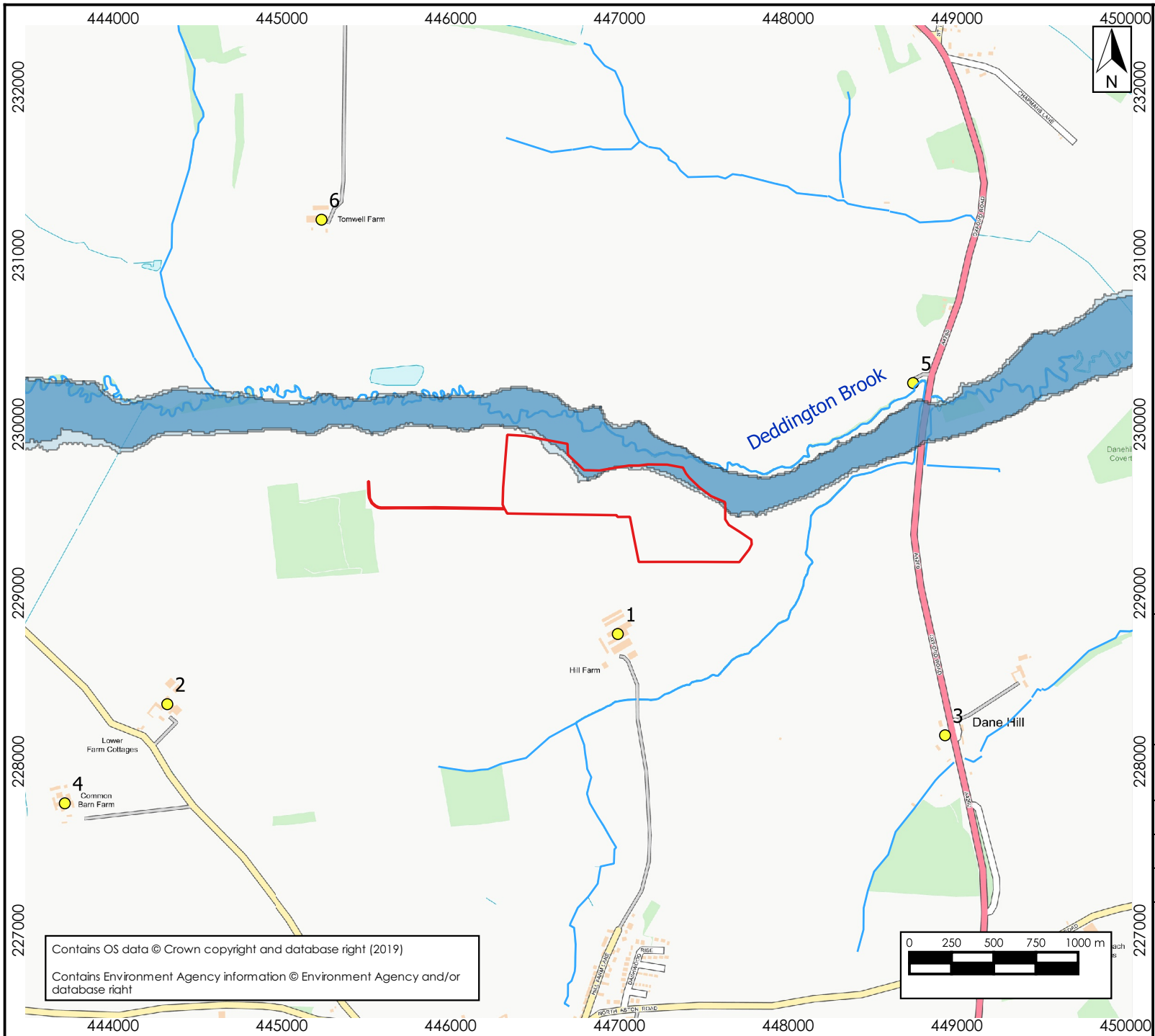
Date Nov-19 Scale 1:20000



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Legend

- Site boundary
- Flood Zone 3
- Flood Zone 2
- Watercourses
- Potential Receptors
  - 1- Hill Farm
  - 2- Lower Farm
  - 3- Dane Hill
  - 4- Common Barn Farm
  - 5- Electrical Substation
  - 6- Tomwell Farm

Scale correct at A4

Client Greenheath NRG Ltd.,  
 Toggam Farm,  
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 Suffolk IP27 9LN

Title Fluvial Flood Risk Map

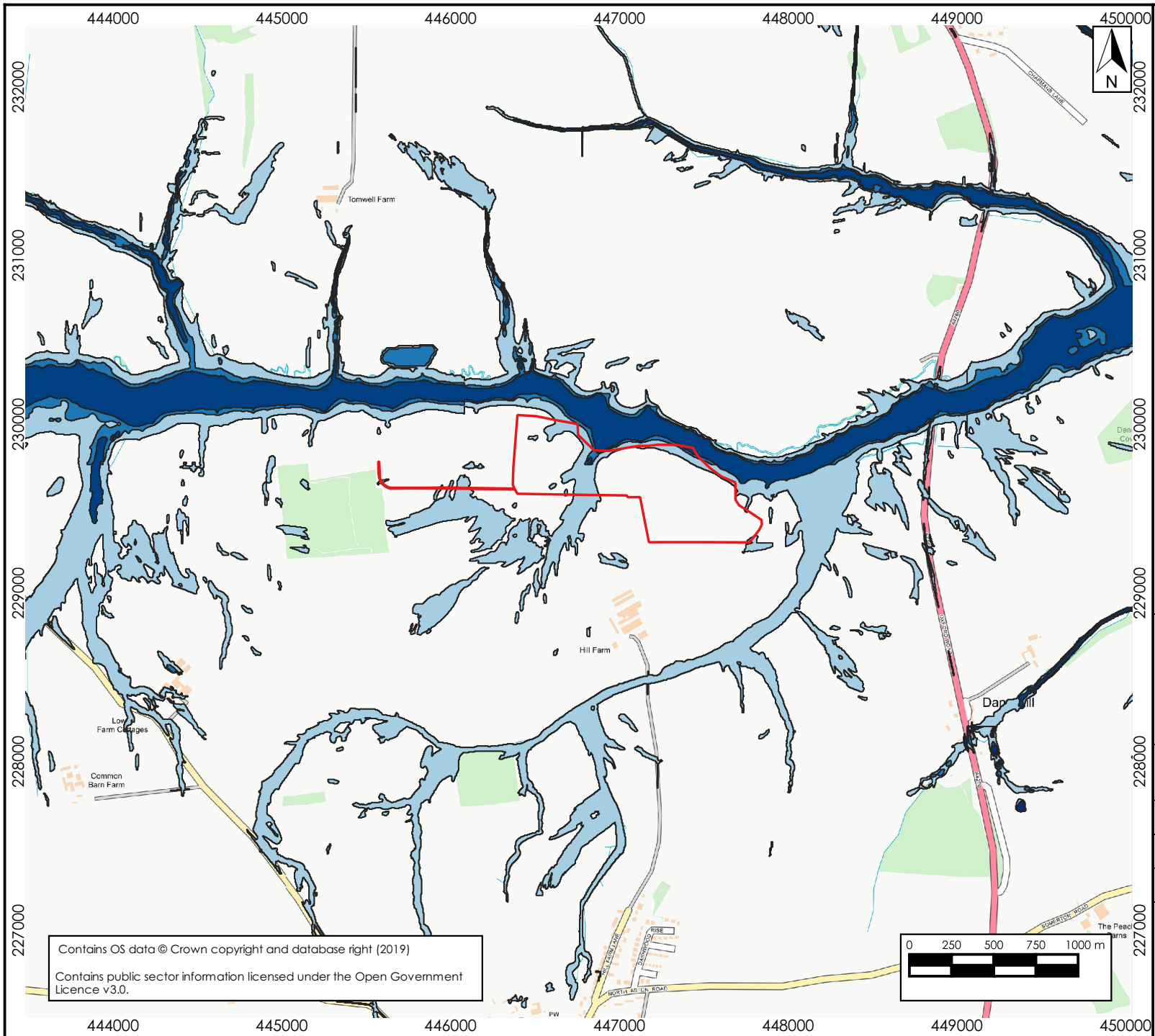
Project Duns Tew Solar Farm

Drawing 2640/FRA/02 Version 1

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Legend

- Site boundary
- RoFSW 1 in 30
- RoFSW 1 in 100
- RoFSW 1 in 1000
- Potential Receptors
  - 1- Hill Farm
  - 2- Lower Farm
  - 3- Dane Hill
  - 4- Common Barn Farm
  - 5- Electrical Substation
  - 6- Tomwell Farm

Scale correct at A4

Client Greenheath NRG Ltd.,  
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Title Surface Water Flood Risk

Project Duns Tew Solar Farm

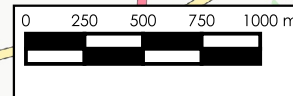
Drawing 2640/FRA/03 Version 1

Date Nov-19 Scale 1:15000

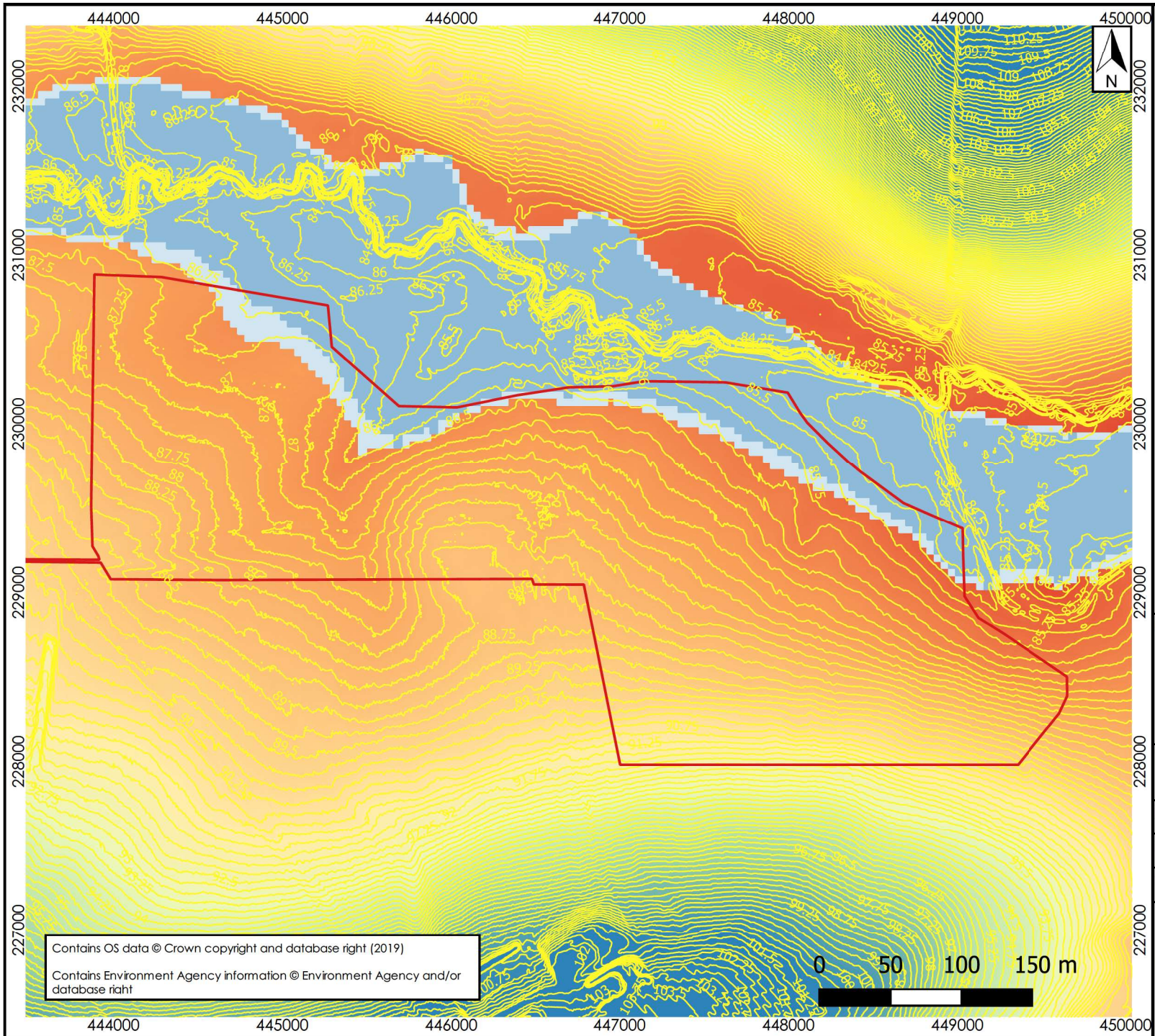
**hafrenwater**   
environmental water management

Barkers Chambers • Barker Street • Shrewsbury •  
Shropshire • SY1 1SB  
www.hafrenwater.com • Tel. 01743 355 770

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- Legend
- Application Boundary
  - 0.25m Contour from LiDAR
  - Flood Zone 2
  - Flood Zone 3

Scale correct at A4

Client Greenheath NRG Ltd.,  
Toggam Farm,  
Newfen Grove Drove,  
Sedge Fen Road,  
Suffolk IP27 9LN

Title Inaccuracy in Broad Scale  
Flood Modeling

Project Duns Tew Solar Farm

Drawing 2640/FRA/04	Version 1
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Date May-20	Scale 1:3829
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**hafrenwater**

environmental water management

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Shropshire • SY1 1SB  
www.hafrenwater.com • Tel. 01743 355 770

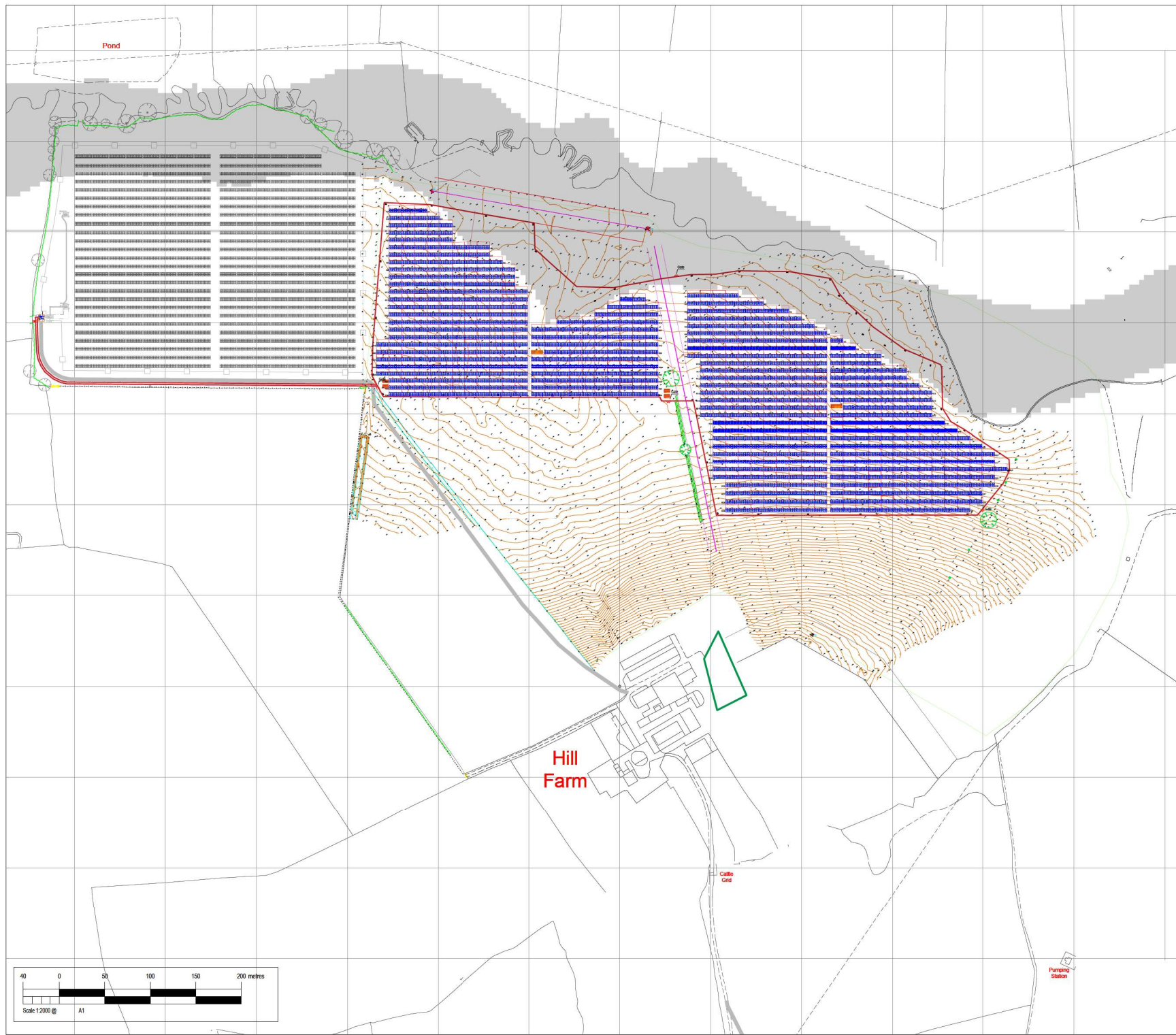
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**APPENDIX 2640/FRA/A1**

**Indicative site layout plans and designs**





Total Area 12.82ha

-  Flood Zone 2
-  Security Fencing
-  Red line planning boundary
-  Security cameras
-  Cable to DNO Substation
-  Existing Solar PV Modules
-  Proposed Solar PV Modules
-  40ft Inverter / Transformer Container
-  20ft Inverter / Transformer / Spares
-  Customer Sub Station

Date:	30/04/2020
Initial Issue:	21/11/2018
Revision Number:	28.1

Company Name and Address:  
 IPV Flexgen Limited, Concorde House  
 24 Warwick New Road  
 Leamington Spa  
 CV32 5JG

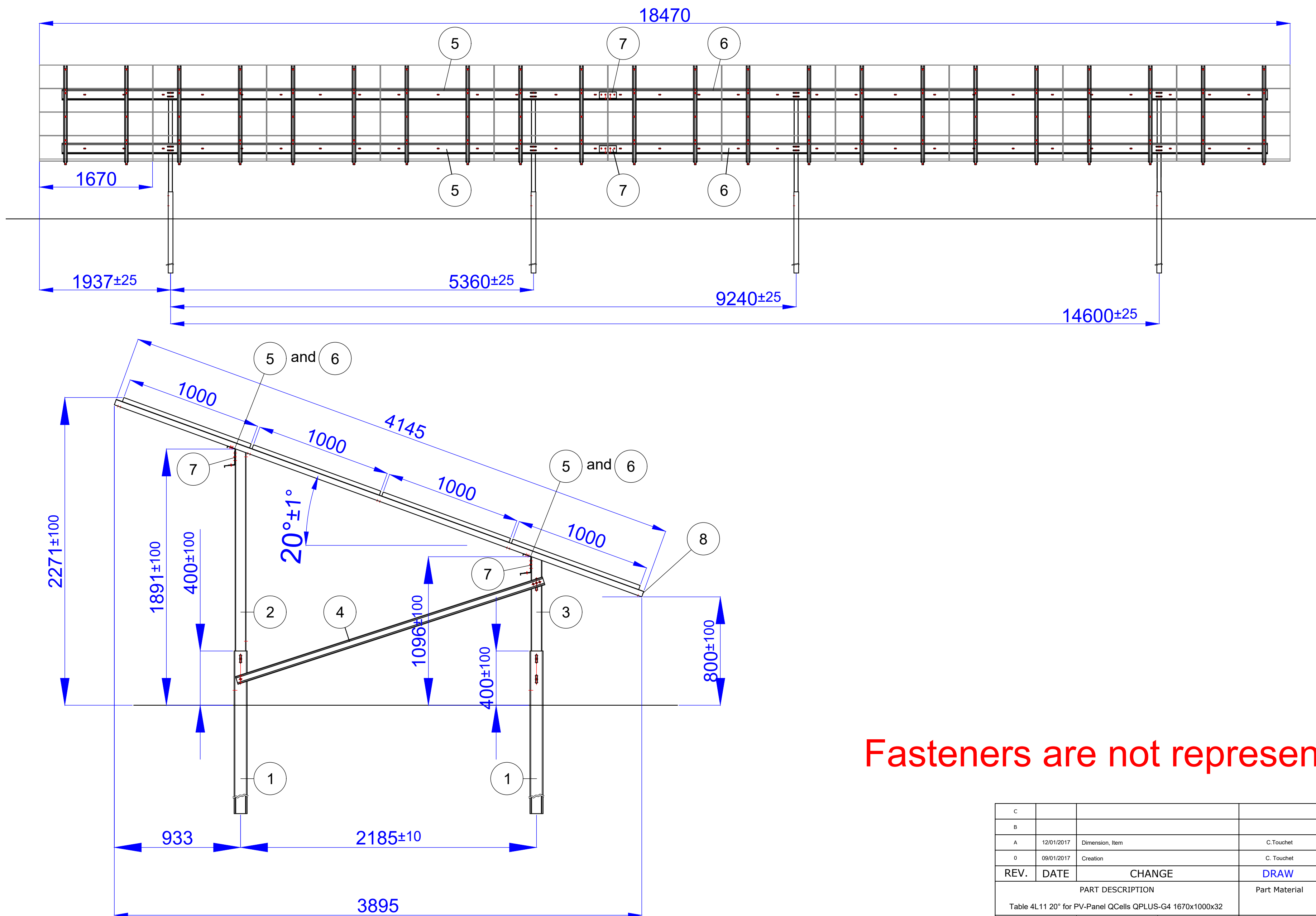


Project Name and Address:  
 Duns Tew Energy Park  
 Duns Tew  
 Bicester  
 Oxfordshire  
 OX25 6JJ

Drawing: Site Layout Plan

Project: Duns Tew Energy Park	Drawing Number: PV-0446-02
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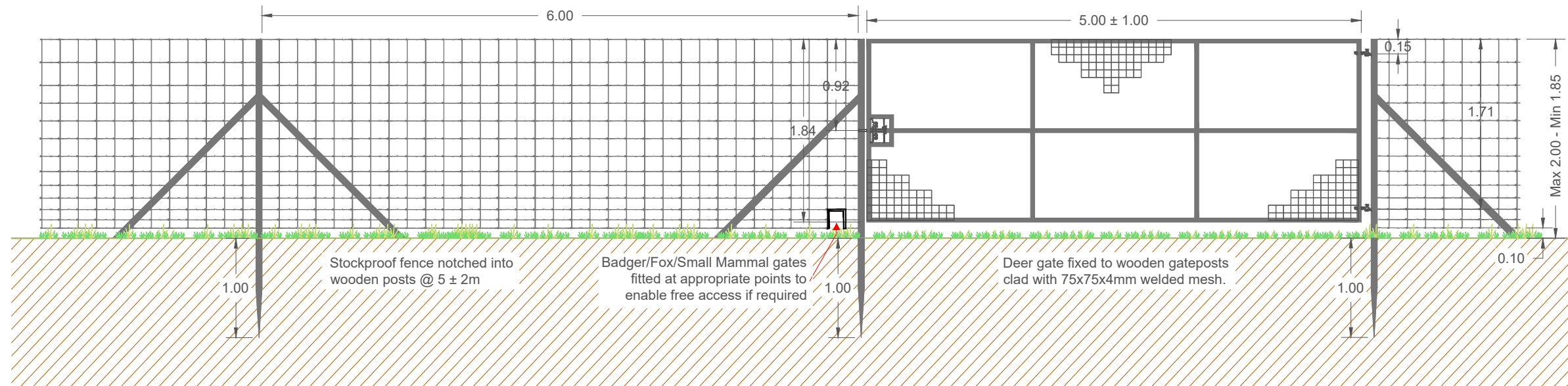
Scale: 1:2000@A1	Drawn By: JC
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**Fasteners are not represented**

C				
B				
A	12/01/2017	Dimension, Item		C.Touchet
0	09/01/2017	Creation		C. Touchet
REV.	DATE	CHANGE	DRAW	CHECK
PART DESCRIPTION			Part Material	Part Coating
Table 4L11 20° for PV-Panel QCells QPLUS-G4 1670x1000x32				
Part nr.	Drawing nr.	Drawing rev. nr.	Scale	Paper size
	17010001	A	1:40	A2

# DETAIL DEER FENCE AND GATE



Drawing No:	1939/D001
Revision:	v.1
Date:	19 September 2019
Project:	Duns Tew Energy Park
Drawing Title:	Security Fencing
Scale:	1:50 @ A3


  
**aardvark**  
 environment matters  

 Aardvark EM Limited  
 Higher Ford • Wwellscombe  
 Taunton • Somerset • TA4 2RL  
 Tel: 01984 624989  
 Fax: 01984 623912  
 environment@aardvarkem.co.uk  
 www.aardvarkem.co.uk

**Notes:**

All dimensions in metres



**APPENDIX 2640/FRA/A2**  
**Environment Agency Product 4 data**

**From:** Enquiries\_THM <[enquiries\\_THM@environment-agency.gov.uk](mailto:enquiries_THM@environment-agency.gov.uk)>

**Sent:** 09 September 2019 13:27

**To:** Megan Williams <[Megan.Williams@hafrenwater.com](mailto:Megan.Williams@hafrenwater.com)>

**Subject:** THM141376: 190813/SF04 Product 4 data request

Dear Megan,

Thank you for your email requesting Product 4 data.

We unfortunately do not have any detailed flood risk modelling in this location.

We are sorry that we are therefore unable to provide modelled flood levels and extents for your site.

Please find attached a Flood Map for Planning, Risk of Flooding from Rivers and the Sea map, and Risk of Flooding from Surface Water map.

We do not hold Environment Agency records of any historic flood events in this location.

You may be interested in the following guidance / information publically available:

- 'Planning Practice Guidance' - provides information about planning considerations in areas at risk of flooding. <https://www.gov.uk/government/collections/planning-practice-guidance>
- 'Planning applications: assessing flood risk' - information about completing Flood Risk Assessments. <https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications>
- 'Site specific flood risk assessment: Checklist' – a checklist to help ensure you have considered all the relevant factors in your flood risk assessment. <https://www.gov.uk/guidance/flood-risk-and-coastal-change#Site-Specific-Flood-Risk-Assessment-checklist-section>

#### **How we have considered your request**

We have considered your request under the provisions of the Freedom of Information Act 2000 / Environmental Information Regulations 2004 (EIR). The Act requires that we respond to requests by advising you whether or not information is held, and if so by providing you with that information. EIR Regulation 3(2) states that information is held if it is in our possession and has been produced or received by us, or it is held by another person on our behalf at the time the request is received.

#### **Information not held**

In this case, the information you have requested is not held by the Environment Agency, and we are therefore refusing your request on the grounds that there is no information we can provide.

Where a request is for environmental information, the Regulations allow us to refuse to disclose it if the exception at EIR Regulation 12(4)(a) applies. The regulation states that a public authority may refuse to disclose environmental information to the extent that it does not hold that information when an applicant's request is received.

It is not possible for us to conduct a public interest balancing test because the reason for non-disclosure is that the information is not held.

I hope that we have correctly interpreted your request. Please refer to our Open Government Licence for the permitted use of the supplied data: <http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

**Please be aware that many of our datasets are now available online. Simply visit [environment.data.gov.uk](http://environment.data.gov.uk)**

We respond to requests for recorded information that we hold under the Freedom of Information Act 2000 (FOIA) and the associated Environmental Information Regulations 2004 (EIR).

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Kind regards,

Zoë Houlihan  
Customers & Engagement Advisor - Thames

**External: 0203 025 5706**

**Internal: 55706**

[enquiries\\_THM@environment-agency.gov.uk](mailto:enquiries_THM@environment-agency.gov.uk)

**Environment Agency** | Red Kite House, Howbery Park, Wallingford, OX10 8BD

**ARE YOU AT RISK FROM FLOODING?**  
Check your flood risk today

**FLOODS**  
~~DESTROY~~  
**DESTROY**  
BE PREPARED