TECHNICAL NOTE

JBA Project Code	2023s1457
Client:	Greentech Invest UK
Date:	December 2024
Author:	George Williams MSc, BSc (Hons) Charlotte Lickman BSc (Hons)
Reviewer:	Faye Tomalin MSc, BSc (Hons), MCIWEM C.WEM
Subject:	Pen Cae'r Lan Farm Flood Risk Statement

1 Introduction

1.1 Terms of Reference

JBA Consulting (JBA) were commissioned by Greentech Invest UK in November 2023 to produce a Flood Risk Statement to support a planning application for a 34ha Solar PV site at Seven Sisters, Neath. The development proposed is a Development of National Significance (DNS).

2 Site Description

2.1 Site Summary

The proposed development is comprised of the 'Main Site' and the associated 'access track'.

The Main Site is located approximately 650m to the south-west of the village of Seven Sisters, Neath. The entire site is 34ha in area and currently comprised of greenfield agricultural land, set in a predominantly agricultural area with the Main Site equalling 33.5ha and the access track an additional 0.5ha in area. The boundary of the Bannau Brycheiniog National Park is approximately 2.5KM to the north. Pen-Cae'r Lan Farm and its associated buildings is located approximately 100m to the western boundary of the Main Site.

The access track connects the Main Site to the A4109, located approximately 1km south of the site. The access track comprises an existing vehicular access which requires some elements of formalisation to serve the Main Site. The access track utilises a small existing bridge cross the Afon Dulais. The bridge is approximately 3m wide and 7m in length.

Site details are summarised in Table 2-1, and a site location plan is shown in Figure 2-1, Figure 2-2 and Figure 2-3.

Table 2-1 Site Summary

Site name	Pen Caer Lan Solar Farm
Main Site area	34ha
Existing land use	Greenfield
Proposal	Solar PV Energy Farm
OS NGR	SN 80627 08131
Local Planning Authorities	Neath-Port Talbot Council
Lead Local Flood Authority	Neath-Port Talbot Council

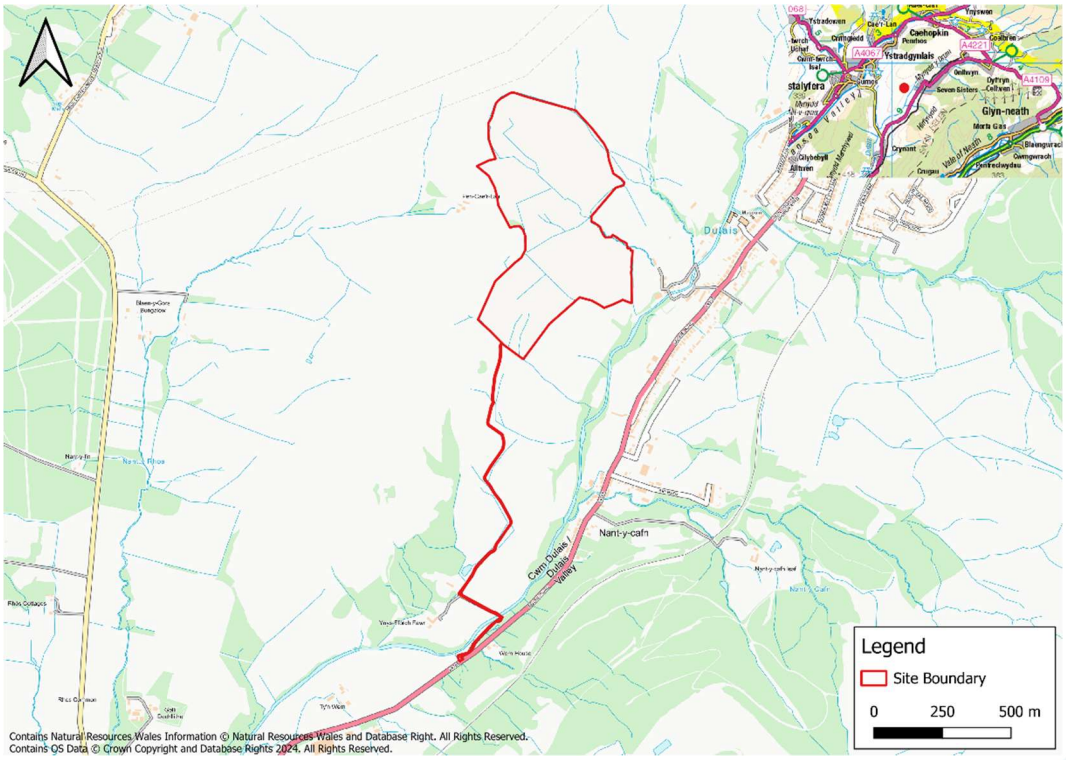


Figure 2-1 Site Overview

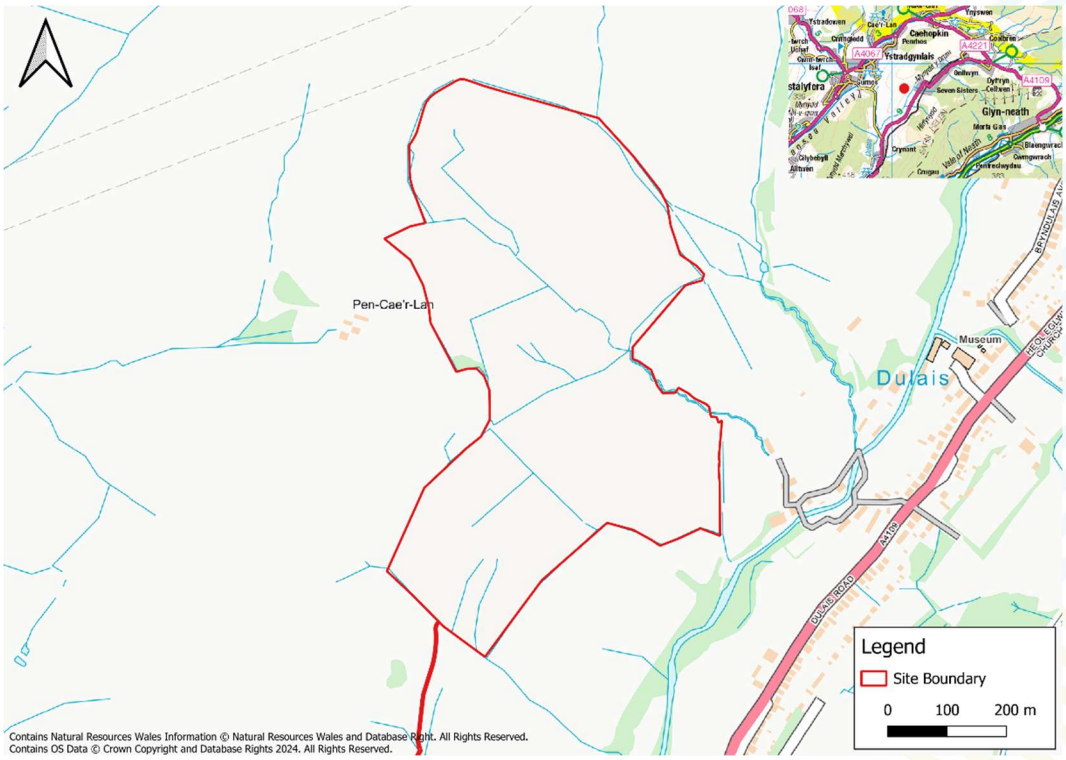


Figure 2-2 Main Site

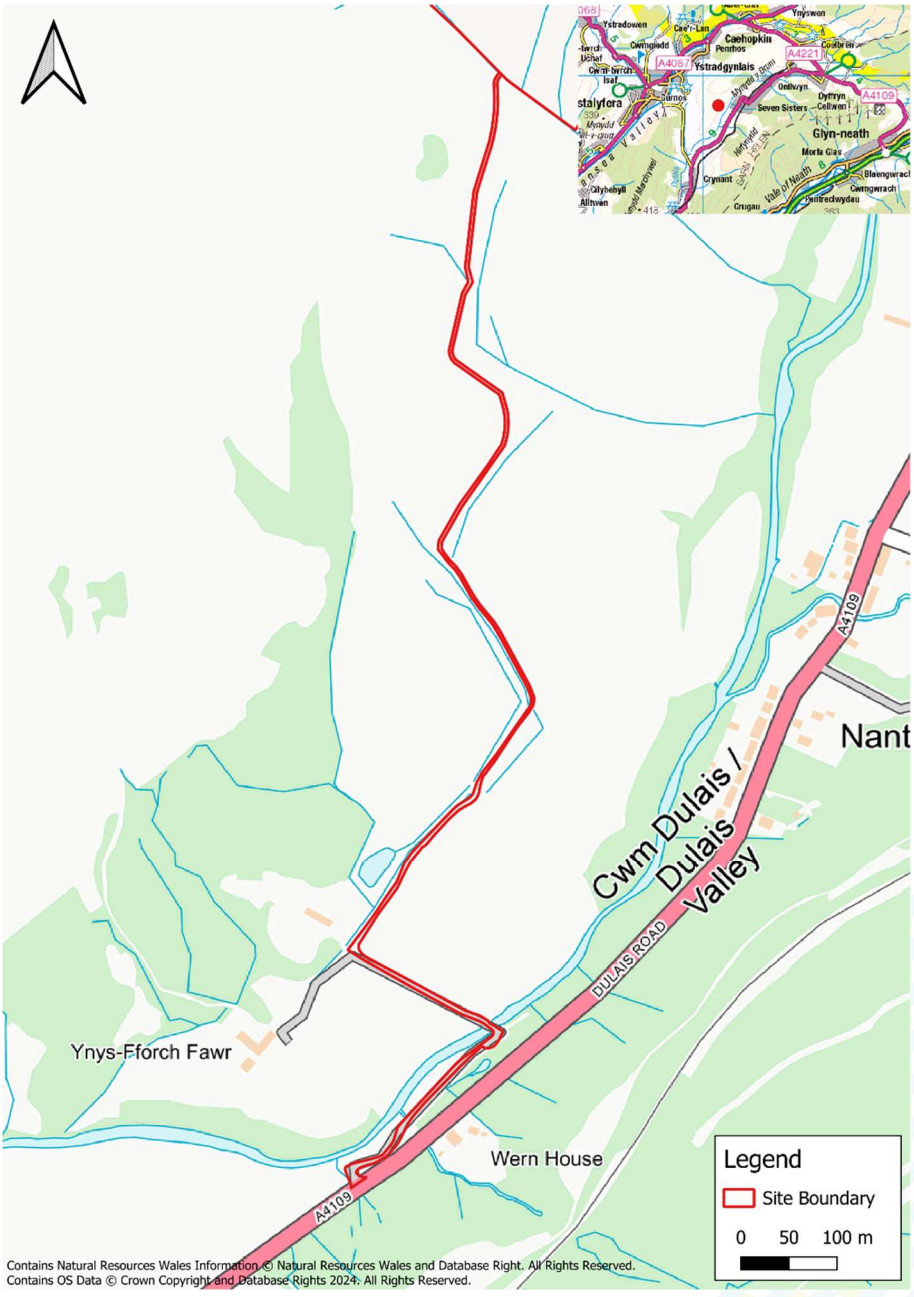


Figure 2-3 Access Track

2.2 Site Topography

A topographic survey was undertaken by Landmark Surveys Wales in May 2024, and is provided in Appendix A. Natural Resources Wales (NRW) open source 1m Light and Detection Ranging (LiDAR), which provides an alternative illustration of the site topography, is shown in Figure 2-4 and Figure 2-5.

Ground levels across the Main Site are shown to fall steeply in a general south-easterly direction. Highest elevations of 214.61mAOD are seen in the north-western corner of the

Main Site, which fall to approximately 144.97mAOD on the eastern border of the Main Site.

The access track falls from 174.88mAOD to 120.00mAOD at the junction with the A4109.

The lowest elevations are found in the far south of the access track and the deck of the existing bridge that crosses the Afon Dulais with elevations of approximately 118.78mAOD.

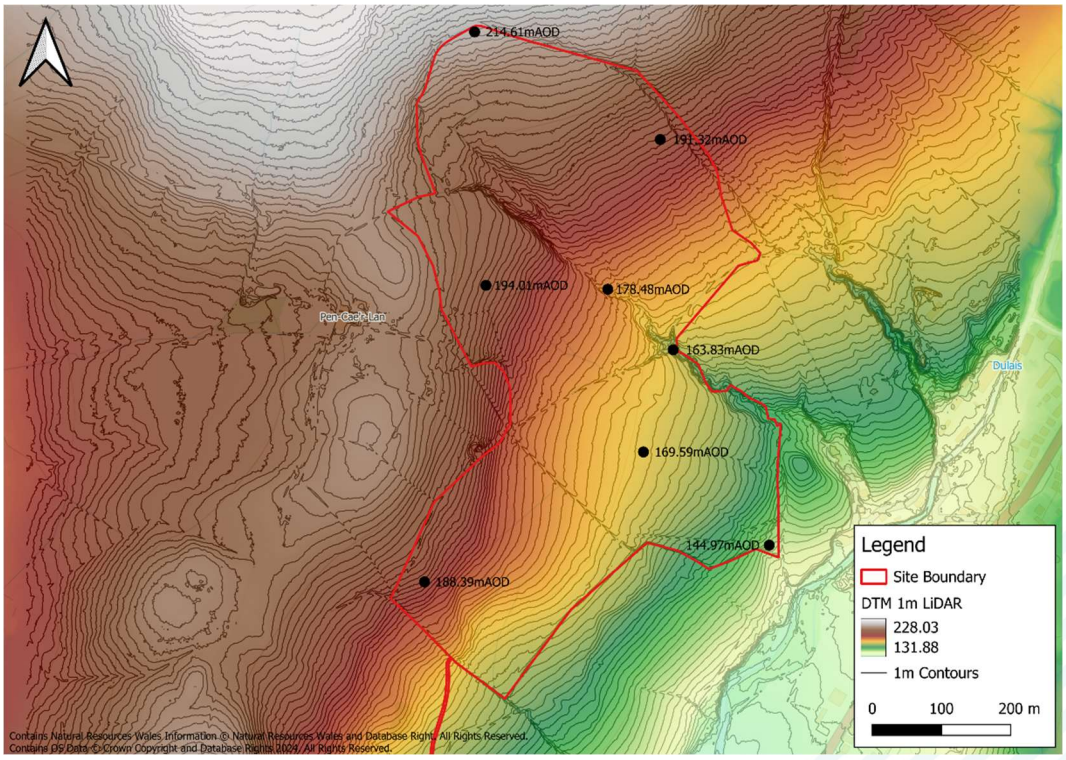


Figure 2-4 NRW 1m LiDAR DTM Topography (Main Site)

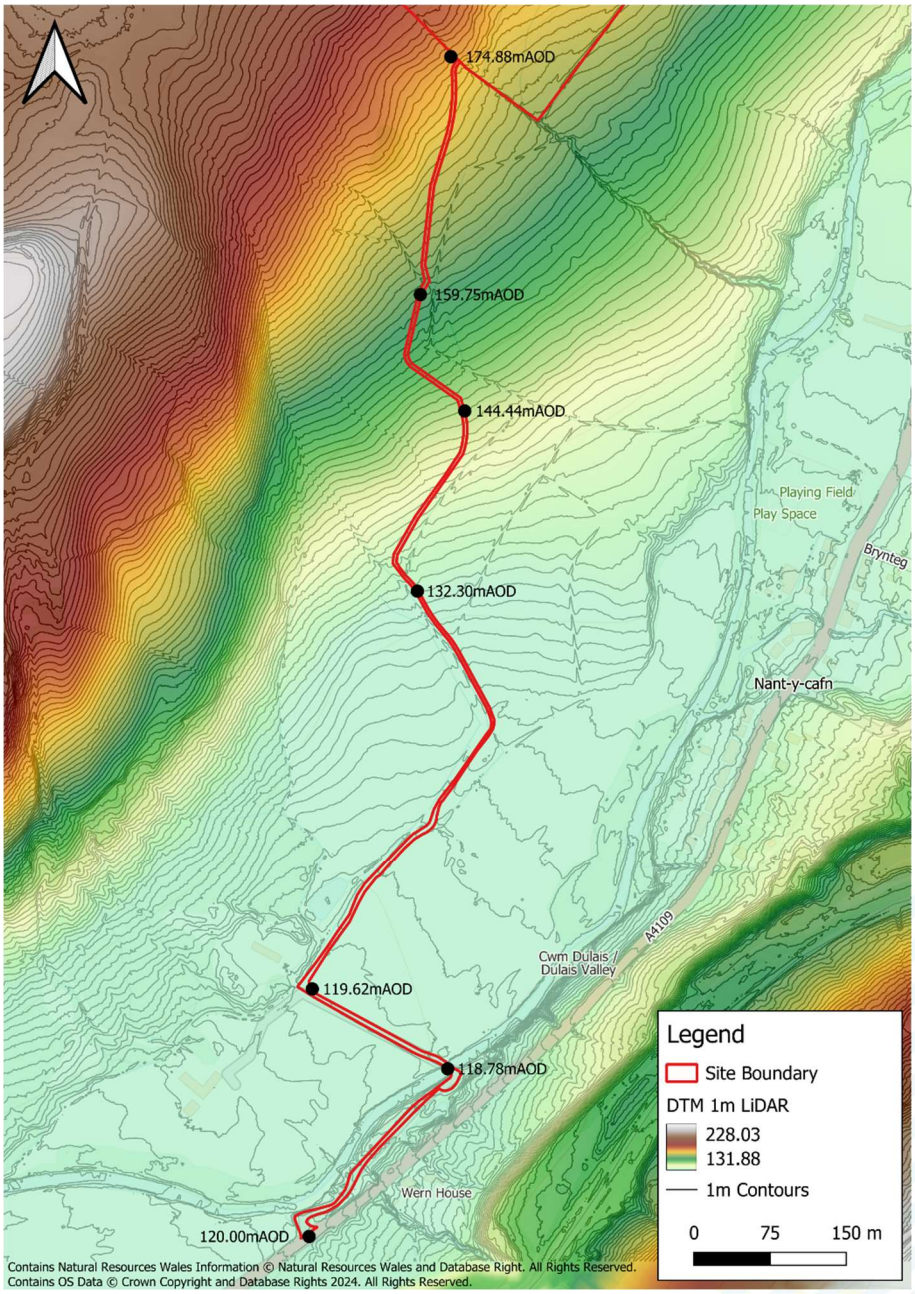


Figure 2-5 NRW 1m LiDAR DTM Topography (Access Track)

2.3 Soils and Geology

The geology of the site has been assessed using the British Geological Survey (BGS) GeoIndex[1]. The bedrock geology across the entirety of the development site is shown to

1 https://www.bgs.ac.uk/map-viewers/geoindex-onshore/

be the South Wales Middle Coal Measures Formation, comprised of mudstone, siltstone and sandstone.

There are varying superficial deposits within the site, with some areas having no recorded superficial deposits. These areas are predominantly located in the north of the Main Site and the very south extent as well as the access track. The areas in the central to south but excluding the southern boundary of the Main Site, are indicated to be underlain by Devensian Till- a sedimentary superficial deposit.

2.4 Watercourses

The Afon Dulais, an NRW Main River, flows in a general south-westerly direction approximately 60m east of the Main Site at its closest point, as seen in Figure 2-6.

Figure 2-6 and Figure 2-7 demonstrate that there is a network of Ordinary Watercourses and drainage ditches which flow around and across the site, which predominantly flow into the Afon Dulais.

The access track crosses the Afon Dulais in the southern extent via an existing bridge. In addition to this a number of small unnamed ordinary watercourses also cross the access track along its length.

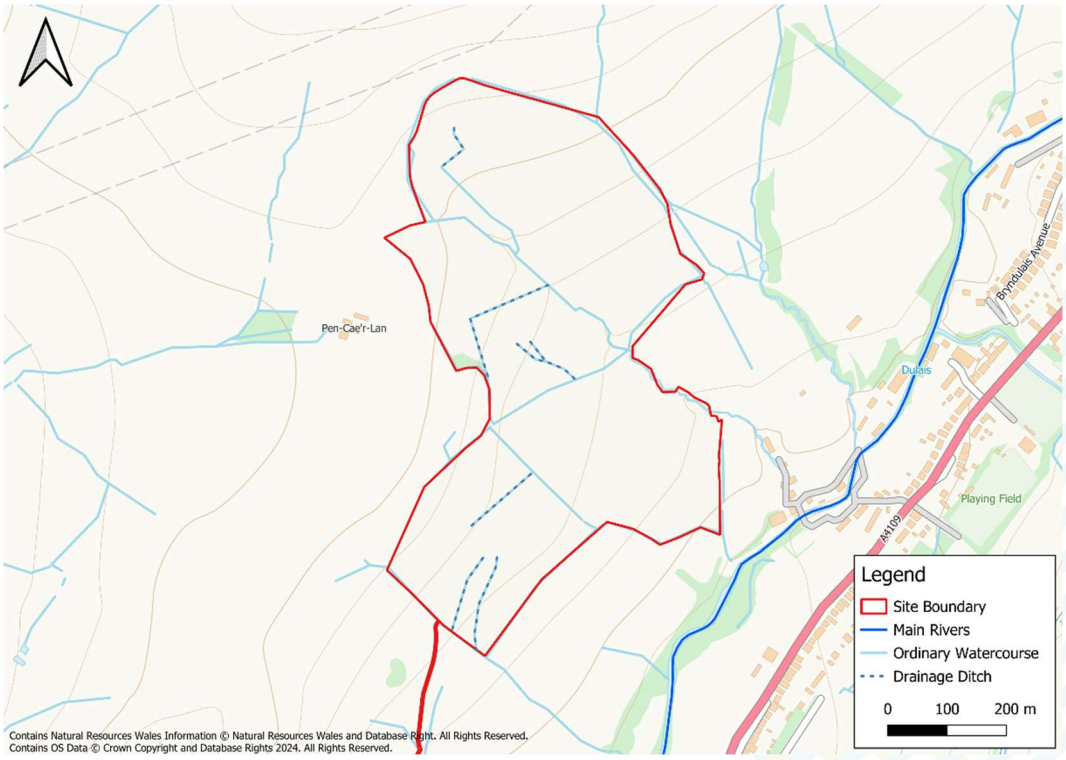


Figure 2-6 Watercourses (Main Site)

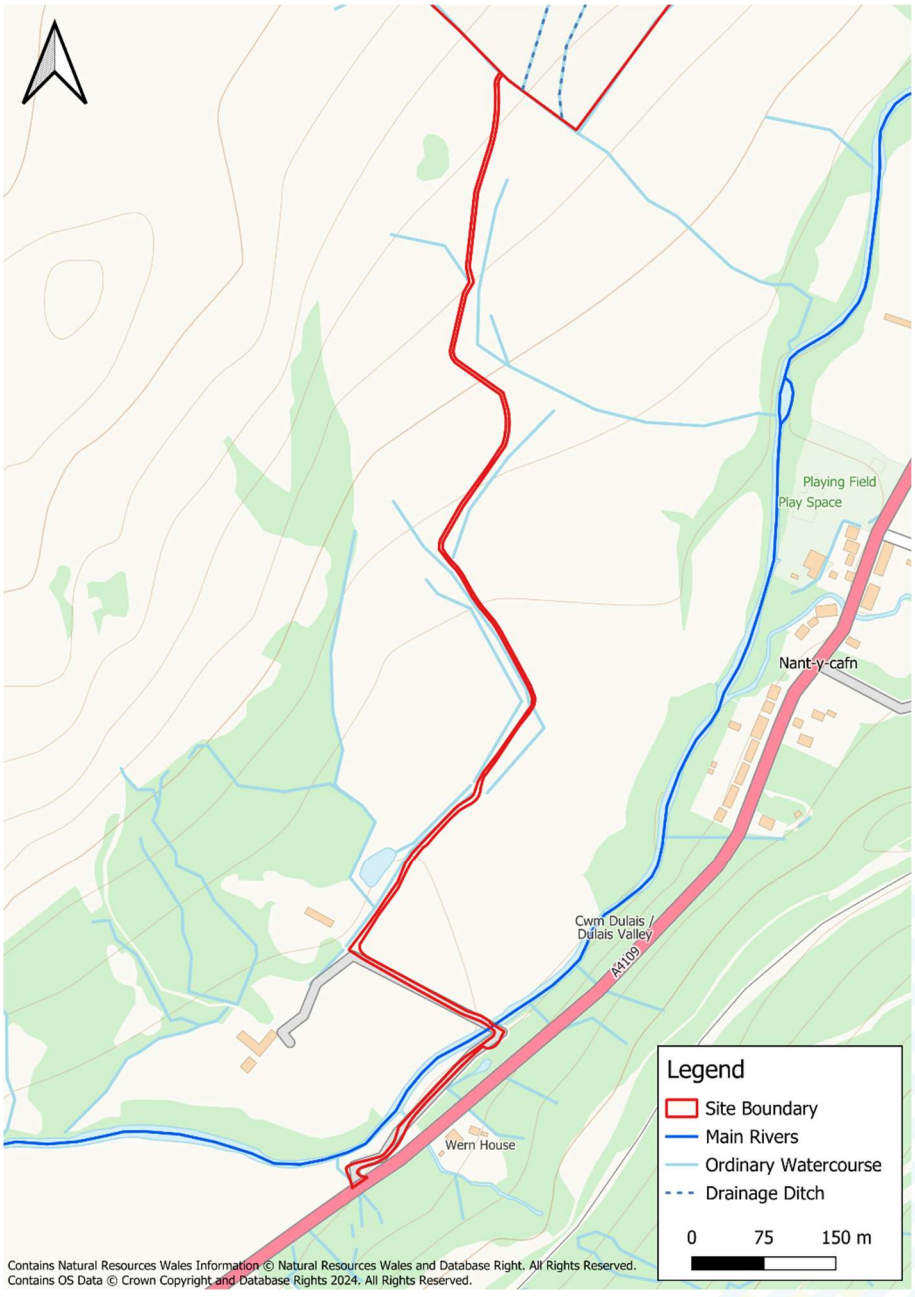


Figure 2-7 Watercourses (Access Track)

2.5 Development proposal

The proposed development is for the installation of a solar farm comprising ground mounted solar PV panels with a generating capacity of up to 25MWp, including permanent grid connection hub, mounting framework, inverters, underground cabling, stock proof fence, CCTV, internal tracks and associated infrastructure including a Distribution Network Operator Substation compound, and landscaping.

The existing access track from the A4019 is not proposed to be altered from its current form. Only repairs are proposed to be made. Proposed access tracks across the site shall be made up of a permeable, MOT Type 1 subbase, such as crushed aggregate, and are therefore proposed to be permeable in nature.

The development proposals are contained in full in Appendix B.

3 Planning Policy and Flood Risk

3.1 Planning Context

Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. These policies have the aim that all development in Wales is sustainable and improve the social, economic, environmental, and cultural wellbeing of Wales as set out in the Wellbeing of Future Generations Act 2015.

Technical Advice Note (TAN-15), introduced by the Welsh Government in 2004, provides technical guidance relating to development planning and flood risk in Wales. The initial requirements of TAN-15 are to identify the vulnerability classification(s) and flood zones relevant to the proposed development and to apply this information to the application of the Justification Test.

Updated drafts for TAN-15 were released in October 2021 and January 2023 and the final update was due to be implemented in June 2023. However, Welsh Government subsequently suspended the implementation of the new TAN-15, and it is uncertain as to when this shall now come into force.

Although the new TAN-15 is not a material consideration, Welsh Government and NRW advise that some consideration is given to the draft Flood Map for Planning (FMfP) as best available information.

3.2 Vulnerability Classification

TAN-15 assigns one of three flood risk vulnerability classifications to a development, as shown in Table 3-1. The proposed development is for a PV solar farm and is consequently classified as 'Less Vulnerable' development.

Table 3-1 Development Categories defined by TAN-15

Development category	Types
Emergency services	Hospitals, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood.
Highly vulnerable development	All residential premises (including hotels and caravan parks), public buildings, (e.g., schools, libraries, leisure centres), especially vulnerable industrial development and waste disposal sites.
Less vulnerable development	General industrial, employment, commercial and retail development, transport and **utilities infrastructure**, car parks, mineral extraction sites and associated processing facilities, excluding waste disposal sites.

3.3 Development Advice Map Classification

The Development Advice Map (DAM) is used to trigger different planning actions based on a precautionary assessment of fluvial and tidal flood risk.

Figure 3-1 indicates that the Main Site is located within DAM Zone A, which are areas considered to be at little or no risk of fluvial or tidal/coastal flooding.

As shown in Figure 3-2, the majority of the southern extent of the access track is located within DAM Zone C2. Isolated pockets of the access track are located within DAM Zone B.

DAM Zone B represents areas of the floodplain which have previously flooded, evidenced through fluvial deposits.

DAM Zone C2 represents 'areas of the floodplain without significant flood defence infrastructure' and are considered to be at risk of flooding.

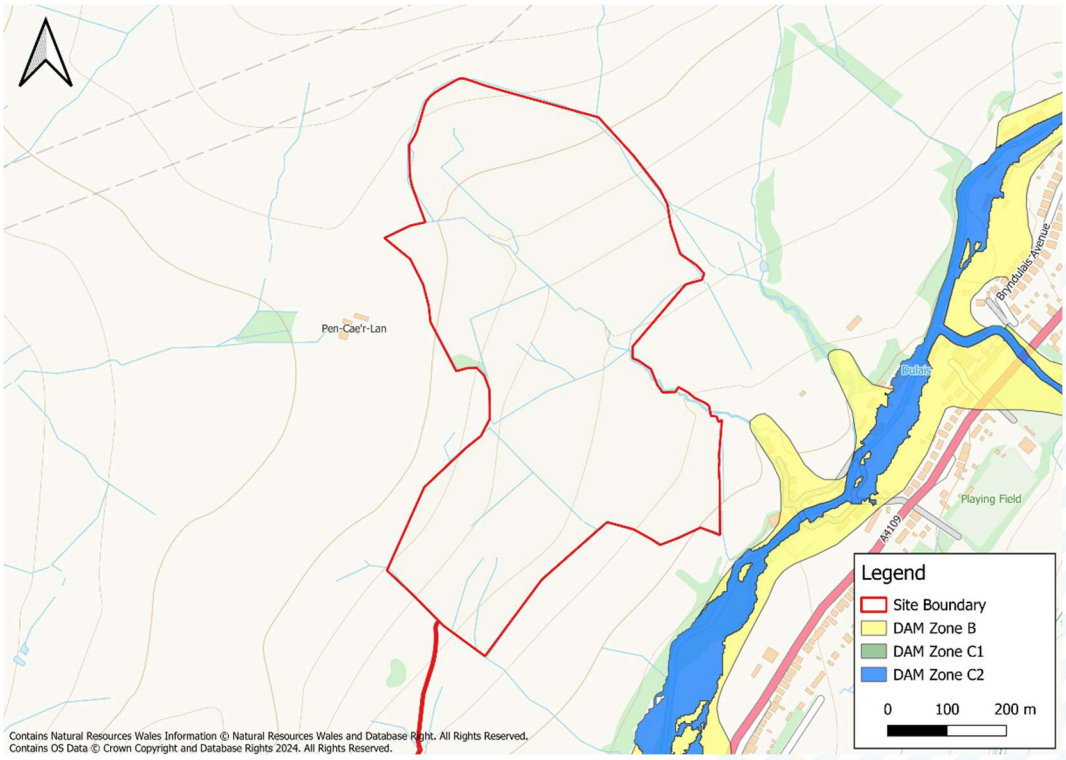


Figure 3-1 DAM (Main Site)

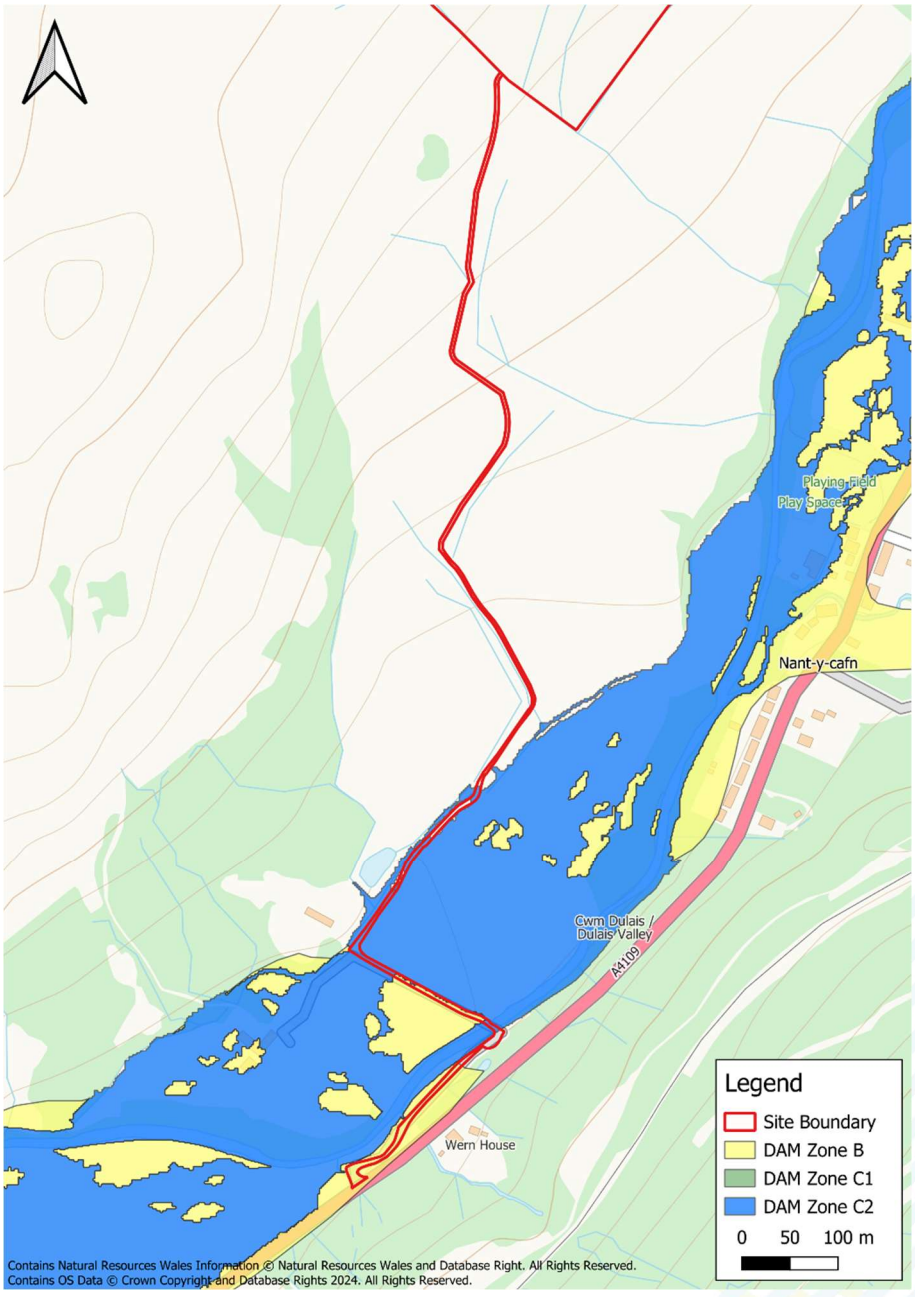


Figure 3-2 DAM (Access Track)

3.4 Flood Map for Planning Classifications

3.4.1 Flood Map for Planning - Rivers

The Flood Map for Planning shows that the Main Site is located within Flood Zone 1, as shown in Figure 3-3. This represents a less than 0.1% (1 in 1000 year) AEP of a flood in any given year, including climate change.

The southern extent of the access track is located within Flood Zones 2 and 3, as shown in Figure 3-4. Flood Zone 2 represents a between 0.1% and 1% (1 in 1000 year and 1 in 100 year) AEP chance of flooding. Flood Zone 3 represents a greater than 1% (1 in 100 year) AEP chance of flooding in any given year.

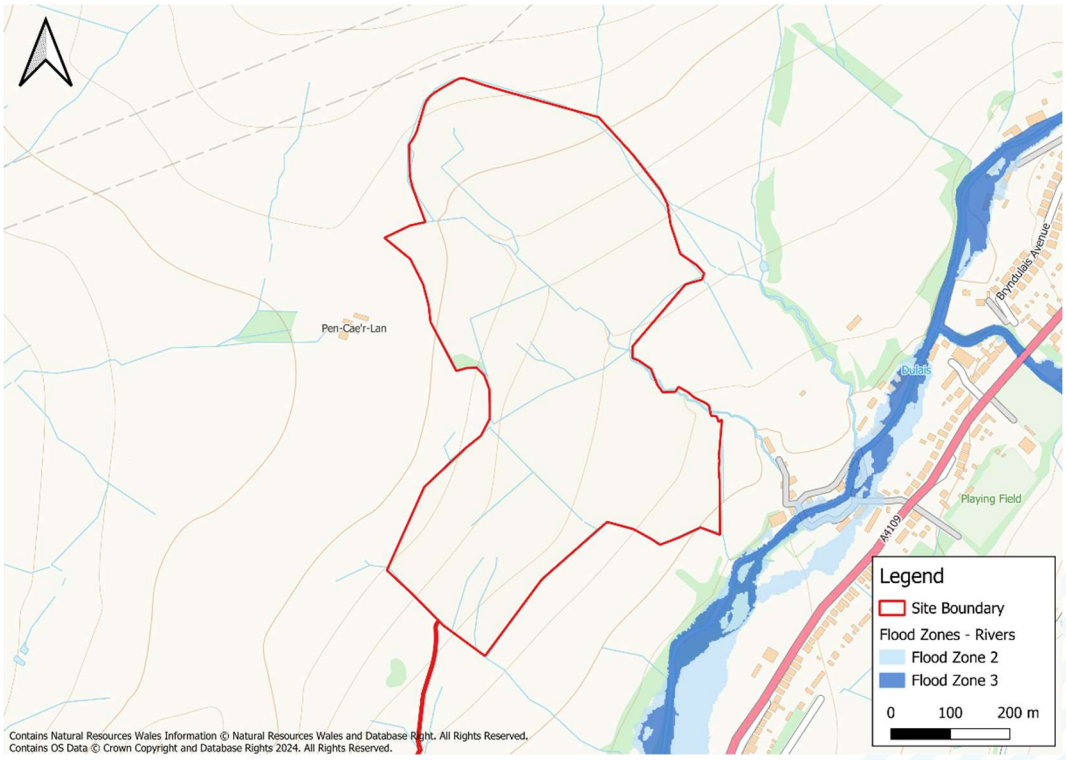


Figure 3-3 FMfP- Flood Risk from Rivers (Main Site)

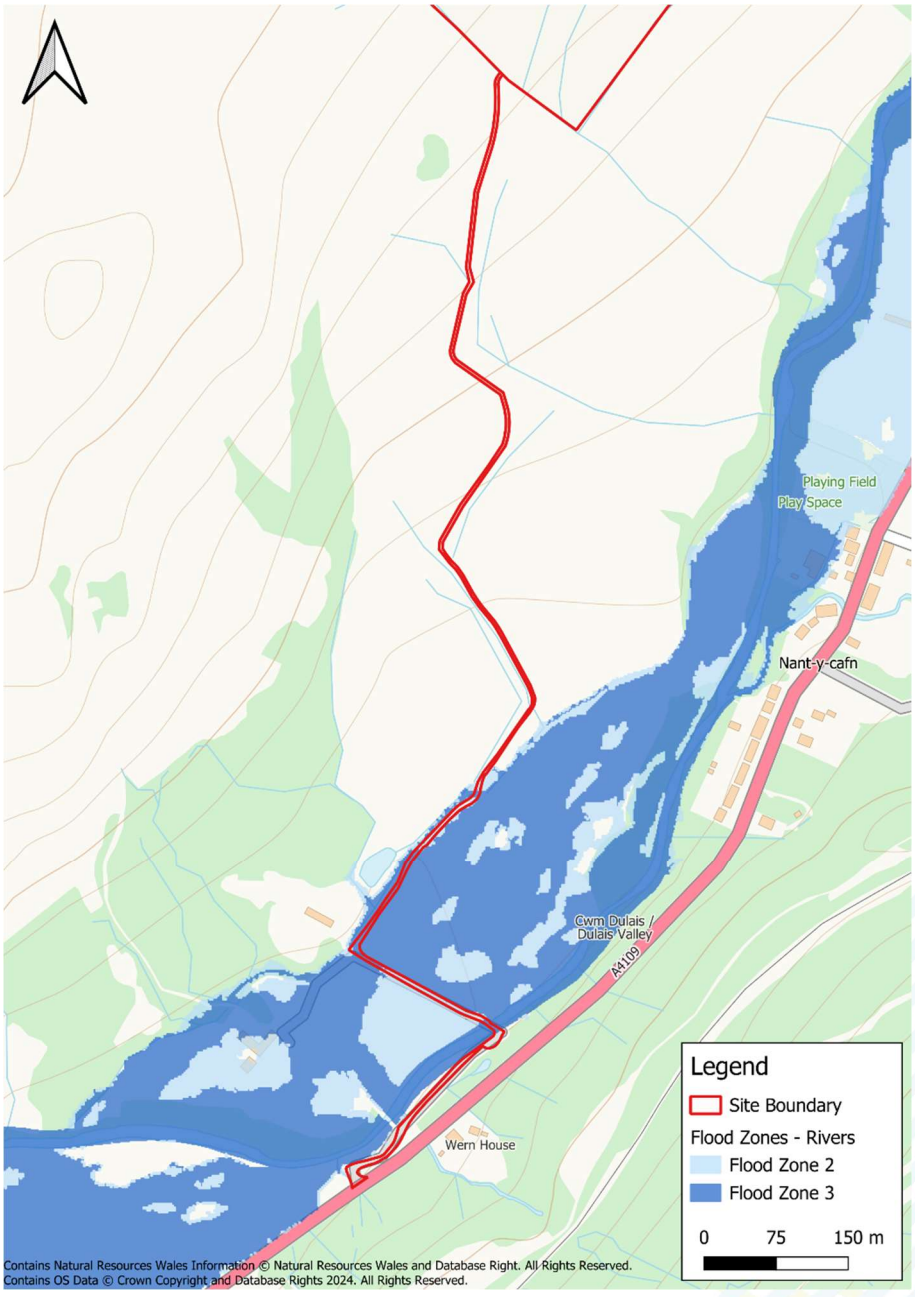


Figure 3-4 FMfP - Flood Risk from Rivers (Access Track)

3.4.2 Flood Map for Planning - The Sea

All areas of the proposed site, including the access track, are located within Flood Zone 1. This represents a less than 0.1% (1 in 1000 years) AEP chance of flooding in any given year, including climate change. No figure has been provided as Flood Zone 1 is displayed as a transparent layer on the FMfP.

3.5 Application of Planning Policy and the Justification Test

The DAM is used to trigger different planning actions based on a precautionary assessment of fluvial and tidal flood risk.

Any site located within Zones B or C triggers the requirements for an FCA, with sites in Zone C being assessed against the Justification Test, including acceptability of the consequences.

Additionally, in response to the release of the Flood Map for Planning in September 2021, NRW issued a letter to Local Planning Authorities in January 2022 outlining their approach to development management consultations where flood risk is a material consideration. Key to their consideration is that the DAM map is out of date, having not been updated since January 2020, with no future updates expected. The Flood Map for Planning therefore constitutes the best available spatial information on flood risk and is updated every 6 months. Consequently, NRW consider both the DAM and Flood Map for Planning as part of the consultation process.

If a site is shown to be at risk of flooding on the DAM but not at risk on the Flood Map for Planning, NRW will raise 'no objection' to a planning consultation. For these sites, it is likely to be unnecessary to prepare an FCA.

Key to the consideration of the application of TAN-15 to these development proposals is the nature of the application and the proposed works. All development is confined to the Main Site, which is located within both DAM Zone A, and the Zone 1 of the FMfP, indicating a very low risk from all sources of flooding.

On both mapping products, flood risk is confined to the southern extent of the access track, to which no work is proposed as part of the development. Consequently, it is considered that the development shall have no impact on risk as a result of the proposals, and the location of the Main Site outside of the flood zones.

A full FCA is therefore deemed unnecessary and disproportionate to the nature of the proposals. However, this report comprehensively assesses flood risk associated with the proposed development site, with an assessment against the Acceptability Criteria of TAN-15 included for completeness.

4 Flood Risk Assessment

4.1 Review of Existing Flood Risk Data

A summary of flood risk to the site is summarised below in Table 4-1, and discussed further in subsequent sections.

Table 4-1 Summary of flood risk

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	✓	The Main Site is at very **low** risk of river flooding The access track has a **low** risk of river flooding
Flood Risk from the Sea	×	The site is at **very low** risk of tidal flooding
Flood Risk from Surface Water and Small Watercourses	✓	The site is at **medium - low** risk of flooding from small and ordinary watercourses
Flood Risk from Groundwater	×	The site is at **very low** risk of flooding from groundwater
Flood Risk from Reservoirs	×	The site is at **very low** risk of flooding from reservoirs
Flood Risk from Sewers	×	There is no known sewage infrastructure crossing or in the vicinity of the site. Therefore, it's been assessed that the risk of sewer flooding is **very low.**

4.2 Historical Flooding

NRW's map of recorded flood extents does not show any evidence of historic flooding on the site.

4.3 Flood Risk from Rivers

NRW's Flood Risk Assessment Wales (FRAW) flood mapping indicates that the Main Site is in an area at risk from flooding from rivers, as shown in Figure 4-1.

However, the southern extent of the access track is indicated to be at low risk of fluvial flooding, which includes the existing bridge crossing the Afon Dulais.

There are no proposed changes to the access track located within the indicative flood extent on both the FRAW and FMfP. Consequently, there will be no impact on flood risk to the site, or to third parties as a result of the development proposals.

Upon operation of the proposed solar development, the access road will be used infrequently and only for maintenance purposes of the Main Site. If required, planned maintenance can be scheduled around local weather and flood warnings, with maintenance proposed avoided during heavy rainfall events or time of high river levels.

It has therefore been assessed that the risk of river flooding to the proposed development site is **low**.

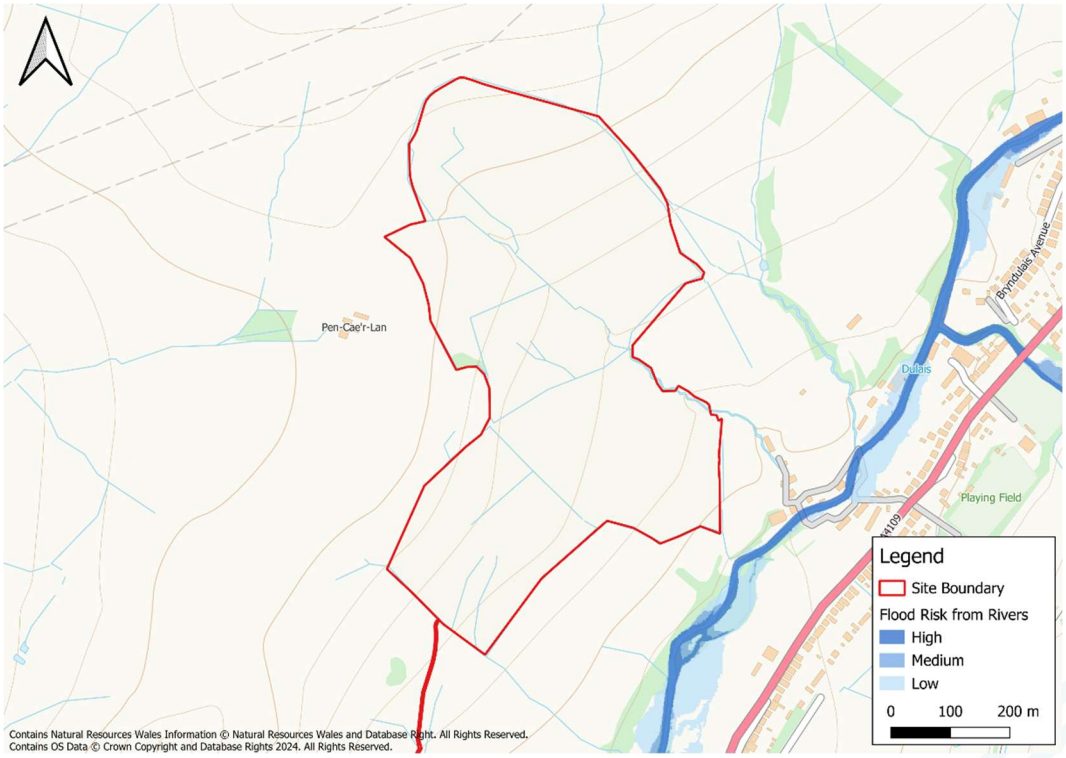


Figure 4-1 FRAW- Flood Risk from Rivers (Main Site)

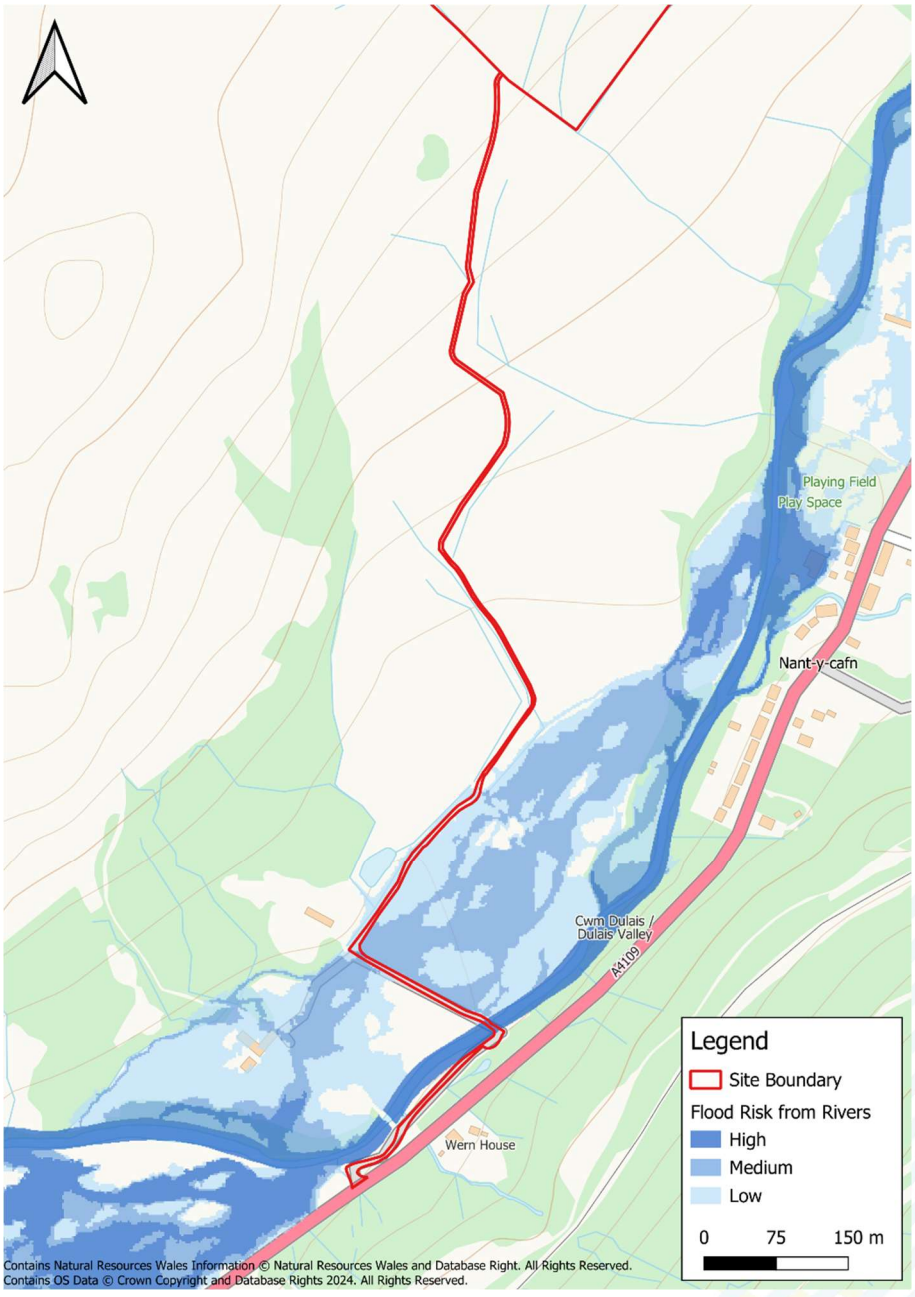


Figure 4-2 FRAW- Flood Risk from Rivers (Access Track)

4.4 Flood Risk from the Sea

Due to the site's location inland, the site is at **very low** risk of tidal flooding. This is shown by a transparent layer on NRW mapping, and therefore no figure has been provided.

4.5 Flood Risk from the Surface Water and Small Watercourses

Surface water flooding occurs when rain falling on saturated ground flows overland, following the local topography. Surface water flooding and subsequent overland flow can therefore pose a risk to both the development site and the surrounding land. Overland flow may originate from the site itself, or adjoining land at a higher elevation from which flow migrates onto the development.

The NRW FRAW map for surface water and small watercourses, as shown in Figure 4-2, identifies the site as being predominantly at very low risk of surface water flooding (i.e. less than 0.1% AEP (1 in 1000) chance of flooding in any given year).

However, several small or ordinary watercourses are located within the proposed development site with the associated access track being frequently transgressed by overland flow routes.

Across the Main Site, flood risk is predominantly associated with an unnamed tributary to the Afon Dulais. The watercourse corridor is shown to have a high risk of surface water flooding (i.e. greater than 3.3% AEP (1 in 30) chance of flooding in any given year).

Development proposals include a 5m buffer zone around several ordinary watercourses that are present on the site. It is therefore envisaged that any flooding associated with the ordinary watercourse will have a limited impact upon the development.

Along the proposed access track, several areas of the road are shown to be at high risk of surface water flooding, as shown in Figure 4-4. Predominantly, this is associated with an unnamed tributary to the Afon Dulais which flows in a south westerly direction. NRW's Flood Hazard Mapping indicates that flood depths of up to 300mm are predicted during High-Risk events.

No alterations in ground levels are proposed across the access track and it is therefore considered that there shall be no change to this source of flood risk as a consequence of the development. Once operational, the access track will be used infrequently as access for maintenance vehicles. Planned maintenance should take account of local weather conditions to determine accessibility of the site during these events.

Consequently, the risk of surface water flooding across the development site is considered to be **medium-low**.

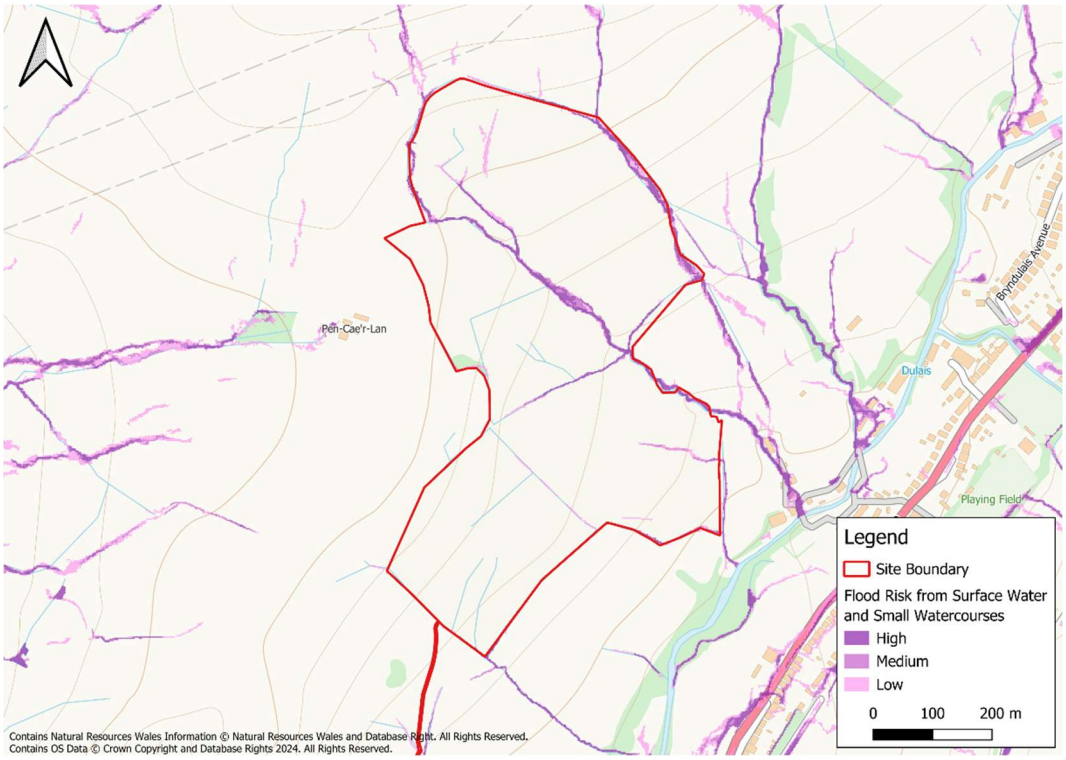


Figure 4-3 FRAW - Flood Risk from Surface Water and Small Watercourses (Main Site)

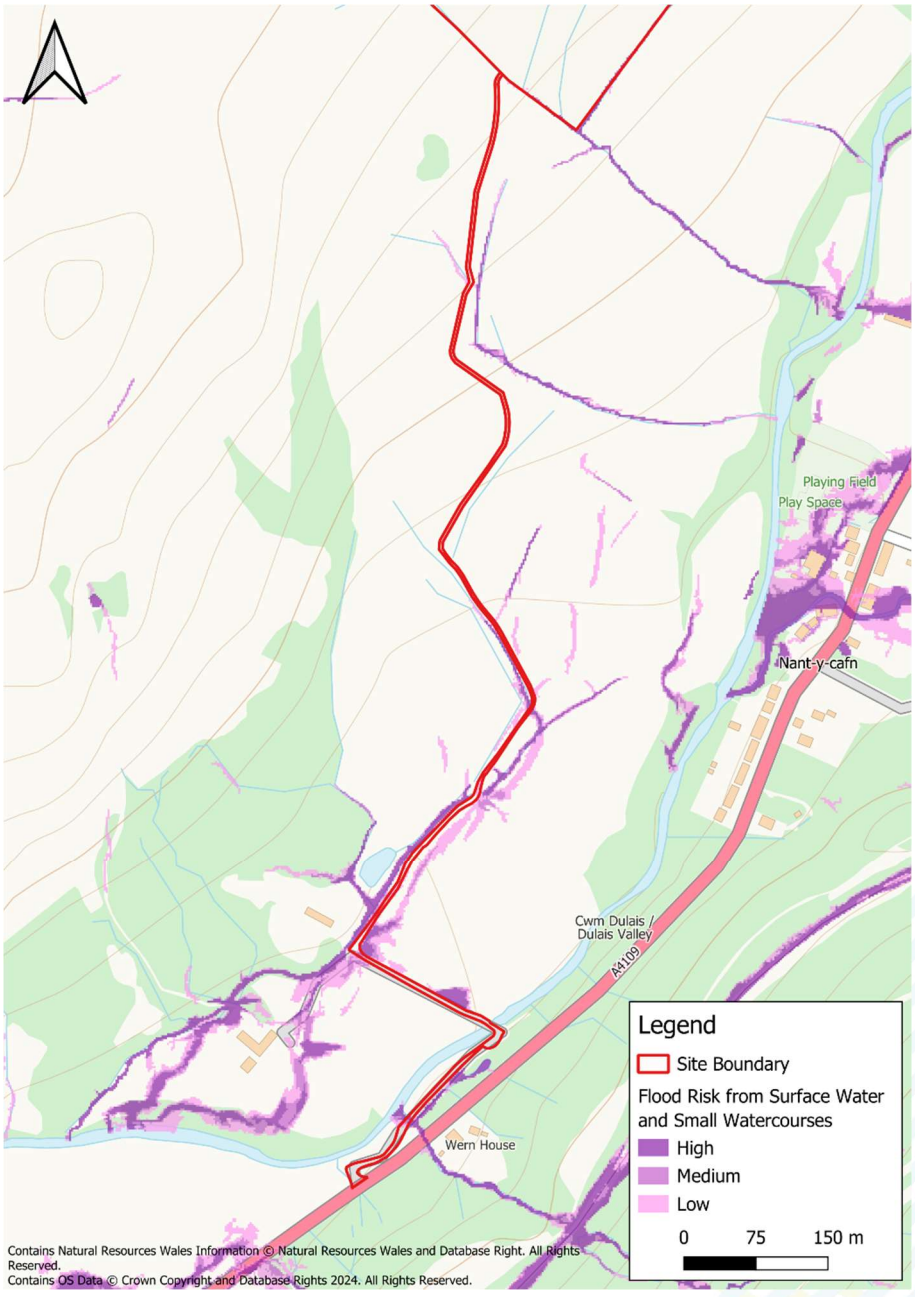


Figure 4-4 FRAW - Flood Risk from Surface Water and Small Watercourses (Access Track)

4.6 Flood Risk from Groundwater

Groundwater flooding is caused by unusually high groundwater levels. It occurs as excess water emerges at the ground surface or within manmade structures such as basements. Groundwater flooding tends to be more persistent than surface water flooding, in some cases lasting for weeks or months, and can result in damage to property. This risk of

groundwater flooding depends on the nature of the geological strata underlying the site and the local topography.

There is no mention of groundwater flooding records presented in the Neath Port Talbot Strategic Flood Consequence Assessment (SFCA). Therefore, it has been assessed that the risk from groundwater flooding is **low**.

4.7 Flood Risk from Reservoirs

NRW's flood maps indicate that the proposed development and associated access track are not located within an area at risk from reservoir flooding, subsequently, the risk is assessed to be **very low**.

4.8 Flood Risk from Sewers

No records of existing sewer records have been provided. However, as the site is predominantly on greenfield land that has been used for agricultural purposes it is unlikely any public or private sewers transgress the site. Therefore, the risk of sewer flooding has been assessed to be **low**.

5 Assessment of Acceptability Criteria

To adopt a precautionary approach, this Flood Risk Statement will demonstrate how all aspects of the Acceptability Criteria are satisfied in full. This has been detailed in Table 5-1 below.

Table 5-1 Acceptability Criteria

TAN 15 Justification Criteria	Comments	Achieved
Developer is required to demonstrate that the site is designed to be flood free for the lifetime [Ref: TAN-15 A1.5] of development for a 1 in 100 (1%) chance (fluvial) and 1 in 200 (0.5%) chance (tidal) flood event including an allowance for climate change in accordance with TAN-15 table A1.14.	The Main Site is predicted to be flood free in all design events. The access track is predicted to flood. However, there shall be no change to the track from existing arrangements and therefore flood risk to the site remains unchanged.	Yes
The development should be designed so that in an extreme (1 in 1000 chance) event there would be less than 600mm of water on access roads and within the property.	The Main Site is predicted to be flood free in all design events. The access track is predicted to flood. However, there shall be no change to the track from existing arrangements and therefore flood risk to the site remains unchanged.	Yes
No flooding elsewhere.	The Main Site is predicted to be flood free in all design events. The access track is predicted to flood. However, there shall be no change to the track from existing arrangements and therefore flood risk to the site, and to third parties, remains unchanged.	Yes
Flood defences must be shown by the developer to be structurally adequate particularly under extreme overtopping conditions (i.e. that flood with a 1 in 1000 chance of occurring in any given year).	N/A - the site is not served by any formal flood defences.	N/A
The developer must ensure that future occupiers of development are aware of the flooding risks and consequences.	Future site owners shall be aware of the risk of flooding to the access track in the form of this report.	N/A

Effective flood warnings are provided at the site.	N/A - the site is not predicted to flood in all design events for fluvial and tidal flooding. However, the southern extent of the access track including the existing bridge that crosses the Afon Dulais is at low risk of fluvial flooding however, the this is within the River Neath Flood Warning Area. This will give ample warning if access is restricted.	Yes
Escape/evacuation routes are shown by the developer to be operational under all conditions.	The Main Site shall be flood free in all events. The access track has a low risk of fluvial flooding which may constrain access and egress. However, access to the site shall be infrequent and for maintenance purposes only. Maintenance should be scheduled and considered against local weather conditions and flood warnings.	N/A
The development is designed by the developer to allow the occupier of the facility for rapid movement of goods/possessions to areas away from flood waters.	N/A	Yes
Development is designed to minimise structural damage during a flooding event and is flood proofed to enable it to be returned to its prime use quickly in the aftermath of the flood.	N/A	Yes

6 Conclusion and Recommendations

JBA Consulting (JBA) were commissioned by Greentech Invest UK Ltd to undertake a Flood Risk Statement (FRS) to support a planning application for the development for a proposed PV solar farm at Seven Sisters, Neath, Wales.

The proposed development site is located approximately 650m southwest of the village of Seven Sisters. The Main Site area (excluding the access road) is approximately 34 ha in size and is greenfield in nature. The site is bound by greenfield land (of agricultural use) in all directions.

Development proposals for the site are for the installation and operation of a PV solar farm that due to its size is deemed a Development of National Significance (DNS).

The Main Site is located within DAM Zone A, which are area considered to be at little or no risk of fluvial or tidal/coastal flooding. Zone A is used to indicate that the Justification Test is not applicable and there is no need to consider flood risk further.

A small section of the access track area is located within DAM Zone C2 and Flood Zone 3 of the FMfP. A full FCA is deemed unnecessary and disproportionate to the nature of the proposals. However, this report comprehensively assessed flood risk associated with the proposed development site, with an assessment against the Acceptability Criteria of TAN-15 included for completeness

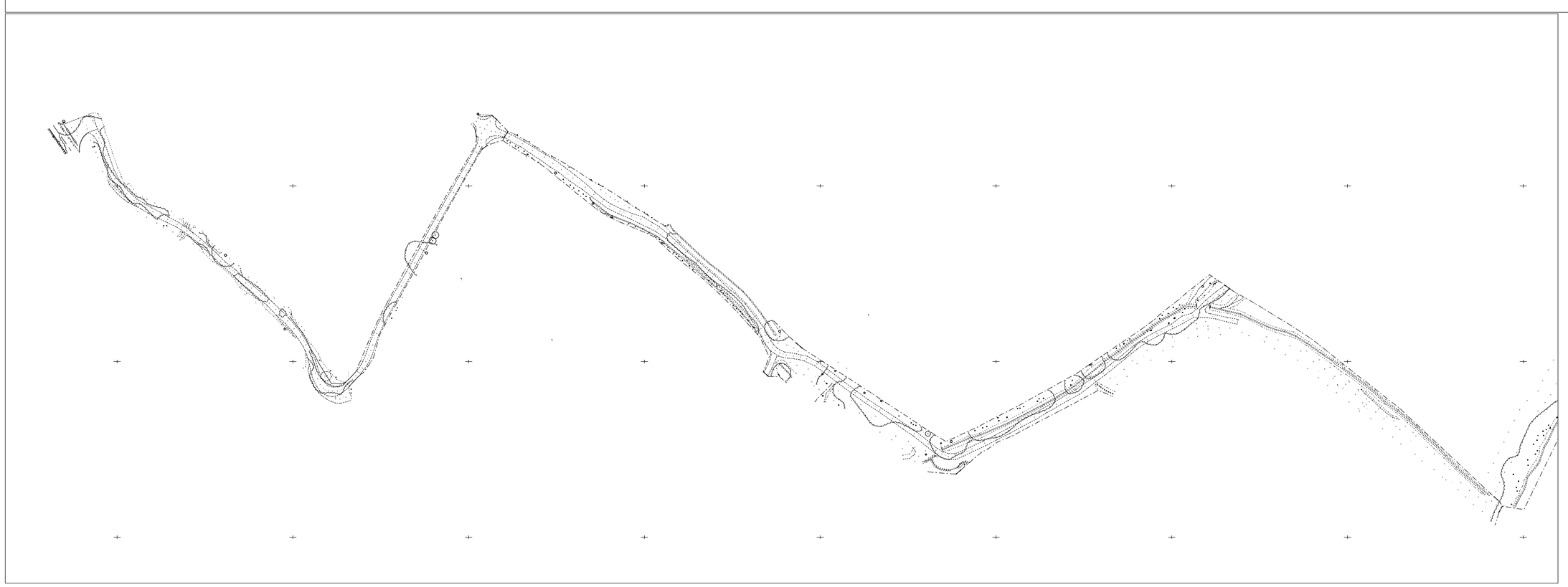
The Main Site is at a very low risk of reservoir flooding and is at very low risk of fluvial, tidal, groundwater and sewer flooding.

The Main Site is shown to be at risk of flooding from small watercourses. However, this risk is confined to the watercourse corridor. 5m buffers have been retained around watercourse corridors and it is therefore considered that surface water flood risk to the Main Site is low.

The access track is at very low risk of reservoir flooding and is at low risk of tidal, groundwater and sewer flooding. The access track is within an area that is shown to be at low to medium risk of fluvial flooding. However, as it is within the River Neath flood alert area. It is therefore thought that access to the main site from the track can be managed so that future planned maintenance will only occur when there is no alert in place.

All aspects of the Acceptability Criteria set out in TAN-15 have been assessed and shown to be satisfied. Consequently, we conclude that on the grounds of flood risk, the proposed development meets the requirements set out in TAN-15 and the aims of Planning Policy Wales.

A Topographic Survey



B Development proposals

Legend:

- Existing Vegetation Retained
- Overhead Power Lines
- Existing PRoW
- Existing Improved Grassland
- Existing Rough Grassland
- Existing Access Track
- Proposed Solar Panels
- Proposed Internal Access Track
- Proposed Perimeter Security Fence
- Proposed Sub-Station
- Proposed Temporary Bridge Crossing over watercourse
- Proposed Improved Grassland and Species Rich Grass Seed Mix (under arrays)
- Proposed Inverter Cabinets

Note:

Unless identified differently within the drawing, the proposed off-set distances have been applied:

- 5m between existing hedgerows and proposed fencelines or solar arrays;
- 5m between proposed fencelines and solar arrays;
- 5m between field drains and fencelines / solar arrays;
- 10m between main water courses (upper edge of embankment) and fencelines or solar arrays; and
- 15m between existing woodland and any element of the proposed development, noting distance is taken from base of identified feature and not the plotted canopy overhang.

Do not scale from this drawing unless for Planning purposes. Illustrated dimensions only are to be used.

All dimensions must be checked on site by the contractor prior to the commencement of any building works.

Where applicable, dimensions and details are to be read in conjunction with specialist consultants' drawings or available information, with any discrepancy between drawings brought to the attention of the project manager prior to the commencement of any fabrication or building works.

0m 40m 100m

1:2000

N

Rev:	Date:	Note:	By:
-	01/09/2024	FIRST ISSUE - Draft v0.1	ICS
-	16/10/2024	FIRST ISSUE - Draft v0.2	ICS
-	19/10/2024	FIRST ISSUE - Draft v0.3	ICS
-	29/10/2024	FIRST ISSUE - Draft v0.4	ICS

Pencaerlan Solar Project

lighthouse
DEVELOPMENT CONSULTING

Web: Https://www.lighthouse-dc.co.uk/

Site: Pencaerlan			
Drawing Title: Site Block Plan - Proposed			
Drawing No or Client Ref: Figure 2		Revision: Draft v0.4	Scale: 1:2,000 @ A1
Drawn: ICS	App By: NB	Date: 01.09.24	CAD Ref: LH-23-27 - DW02 - Draft v0.4 - Fig 2 Site Block Plan