Fferm Solar Larnog

Environmental Statement

Volume IV, Appendix 11E: Flood Consequences Assessment and Outline Drainage Statement

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Issue Sheet

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Document Title

Volume IV, Appendix 11E: Flood Consequences Assessment and Outline Drainage Statement

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1. Introduction

1.1. Appointment and Brief

1.1.1. WSP UK Ltd (WSP) has been commissioned by Trydan Gwyrdd Cymru ('the Applicant') to prepare a Flood Consequence Assessment (FCA) and Outline Drainage Statement (ODS) in support of the proposed Larnog Solar Farm (hereafter the 'Proposed Development').

1.1.2. The Proposed Development would be located on land approximately 500 m south-west of Penarth and 550 m east of Sully (hereafter 'the Site'). The Site is approximately 46.5 hectares (ha) in size and largely comprises agricultural land with defined field boundaries and pockets of woodland.

1.1.3. This FCA and ODS has been produced in accordance with Technical Advice Note (TAN) 15: Development, Flooding and Coastal Erosion (TAN15)[1] and Planning Policy Wales (PPW)[2], which sets out the Welsh Government's planning policies and guidance in relation to flood risk, drainage and development.

1.1.4. A description of the Proposed Development is provided in **Section 3** of this report.

1.2. Scope and Methodology

Scope

1.2.1. This report summarises the risk posed to the Proposed Development from all potential sources of flooding, as well as those that may arise as a result of the Proposed Development. Where appropriate, flood risk management measures are identified to ensure no increase in flood risk throughout the operational lifetime of the Proposed Development.

1.2.2. The ODS demonstrates how surface water runoff arising from the Proposed Development would be managed over the lifetime of the Proposed Development, taking climate change into account. This ODS accompanies the Environment Statement (ES) and provides information required to support the approval process with the Sustainable Drainage Systems (SuDS) Approval Body (SAB); pre-SAB application at the early stage of development.

[1] Welsh Government (2026) Technical Advice Note (TAN) 15: Development, Flooding and Coastal Erosion. Cardiff: Welsh Government. Available at: https://www.gov.wales/technical-advice-note-tan-15-development-flooding-and-coastal-erosion [Accessed: 15 October 2026].
[2] Welsh Government (2024) Planning Policy Wales: Edition 12. Cardiff: Welsh Government. Available at: https://www.gov.wales/planning-policy-wales [Accessed: 15 October 2026]

1.2.3. In particular, the ODS provides information on pre-development runoff rates, proposed peak runoff rates, surface water storage requirements and ways of disposal. It also presents how water quality objectives will be achieved via application of relevant pollution control measures and identifies maintenance activities required to support the long-term performance of the drainage network and SuDS elements.

Methodology

1.2.4. This FCA uses a source-pathway-receptor approach for assessing flood risk:

- Source – the origin of potential flood risk, such as rainfall, watercourses, tidal influences, groundwater, or infrastructure failure (i.e. defence breach);
- Pathway – the route by which a flood source may affect receptors (e.g. overtopping of embankments and surface flow routes); and
- Receptor – people, property or assets that may be affected by identified flood mechanisms.

1.2.5. Flood risk sources considered include fluvial, tidal/coastal, surface water, groundwater and artificial sources (including reservoirs and canals). Existing drainage infrastructure has also been reviewed where relevant.

1.2.6. The receptors assessed include the Proposed Development, site users and maintenance staff, surrounding agricultural land, nearby roads and access routes, adjacent residential and community uses and nearby environmental features.

1.2.7. The following sources of information have been reviewed in support of this report:

- British Geological Survey (BGS) Geoindex (Onshore) Viewer (2026)[3];
- BGS Geology Viewer (2026)[4];
- DataMapWales (2026)[5];
- Defra MAGIC Map (2026)[6];
- Emapsite Utility Premium Desktop Search Report (Reference: EMS17416, dated May 2025);
- Flood Map for Planning (Natural Resources Wales (NRW), 2026)[7];
- Google Maps (Aerial Imagery) (2026)[8];

[3] British Geological Survey (2026) BGS Geology Viewer. Available at: https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/ [Accessed: 15 September 2026].
[4] British Geological Survey (2026) GeoIndex (Onshore). Available at: https://www.bgs.ac.uk/map-viewers/geoindex-onshore/ [Accessed: 15 October 2026].
[5] Welsh Government (2026) DataMapWales. Available at: https://datamap.gov.wales/maps/new#/ [Accessed: 15 October 2026].
[6] Department for Environment, Food and Rural Affairs (2026) MAGIC Map Application. Available at: defra.gov.uk [Accessed: 15 October 2026].
[7] Natural Resources Wales (2026) Flood Map for Planning. Available at: https://flood-map-for-planning.naturalresources.wales/ [Accessed: 15 October 2026]
[8] Google (2026) Google Maps. Available at: google.com [Accessed: 15 October 2026].

- Landis Soilscapes (2026)[9];
- Mapcarta – The Open Map (2026)[10];
- Ordnance Survey Mapping (2026)[11] ;and[12]
- Technics Group Digitalised Desktop Utility Survey (Drawing Ref: SP25811-TEC-DR-0001, dated June 2025).

1.2.8. The FCA and ODS has also been informed by **Figure 5.1: Indicative Site Layout** of the ES (see Volume III).

1.3. Advisory Information and Limitations

1.3.1. WSP have prepared this report for the Proposed Development, as described in **Section 3** of this report, in accordance with the instructions of the Applicant.

1.3.2. The information presented in this report is provided for the purpose of the FCA and ODS as commissioned by the Applicant. Its suitability for other purposes contained herein are limited by the availability of background information and by the intended use of the Proposed Development.

1.3.3. This FCA and ODS has been undertaken as a desk-based assessment using publicly available flood risk mapping, topographic data (LiDAR) and other third-party datasets available at the time of writing. A site visit has not been undertaken by WSP for the specific purposes of this report. Where relevant, information provided by the wider project team has been reviewed and incorporated into this assessment; however, the information reviewed has not replaced a flood risk and drainage specific site inspection.

1.3.4. Third-party information has been used in the preparation of this report, which WSP, by necessity, assumes is correct at the time of writing. Whilst reasonable checks have been undertaken, WSP accepts no liability for inaccuracies within third-party data.

1.3.5. At this stage, no site-specific topography survey has been provided for review. The topography assessment has therefore been undertaken using the latest publicly available LiDAR/DTM data. No site-specific ground investigations or infiltration testing has been undertaken either; therefore, assumptions have been made based on the published site conditions and geology.

1.3.6. The ODS does not include a foul drainage strategy and is limited to the anticipated surface water impacts of the operational stage of development. Consideration of surface water drainage during construction works would be set out within the

[9] Cranfield University (2026) LandIS: Soilscapes Viewer. Available at: landis.org.uk [Accessed: 15 October 2026]
[10] Mapcarta (2026) Mapcarta: The Open Map. Available at: mapcarta.com [Accessed: 15 October 2026].
[11] Ordnance Survey (2026) OS Maps. Available at: https://explore.osmaps.com/ [Accessed: 15 October 2026].

Construction Environmental Management Plan (CEMP) and is not considered further in this report. An outline CEMP is provided as part of the ES (**see Appendix 5A: oCEMP**).

1.3.7. The ODS also excludes a fire water management strategy for the Battery Energy Storage Systems (BESS) and Substation.

2. Site Background

2.1. Site Location

2.1.1. The Site is located within the Vale of Glamorgan Council administrative area, between the settlements of Penarth and Sully. The Site is situated east of the B4267 Lavernock Road and in proximity to the Glamorgan Coast.

2.1.2. The Site comprises four distinct land parcels, referred to in this assessment as the Northern, Central, Eastern, and Western Parcels. Please refer to **Figure A.1** (**Annex A**).

Table 2.1 – Indicative land parcel locations

Land Parcel	Ordnance Survey National Grid Reference	Nearest Postcode	Land Area (ha)
Northern Parcel	ST 17414 68485	CF64 5UY	0.4
Central Parcel	ST 17780 68217	CF64 5XS	26.7
Western Parcel	ST 17275 68155	CF64 5UY	14.3
Eastern Parcel	ST 18409 68379	CF64 5XQ	5.1

2.1.3. The total Site area is 46.5 ha. For the purposes of this assessment, the 'Site', refers to the boundary encompassing the land required for the Proposed Development, including all four parcels.

2.1.4. Existing features include hedgerow field boundaries, woodland, drainage ditches and isolated areas of standing water. These features form part of the existing character of the Site and are considered further within the flood risk assessment in **Section 5** of this report.

2.1.5. The Site is accessed via Fort Road and St Mary's Well Bay Road, both of which connect to the wider highway network via the B4267 Lavernock Road. The consented Sully to Cosmeston Active Travel Route (application reference: 2025/00493/RG3) is also located adjacent to the north of the Site, which runs adjacent to the northern boundary. This cumulative development includes works for a shared pedestrian and cycle route from Sully to Cosmeston.

2.1.6. **Table 2.2** summarises the existing land uses surrounding the Site.

Table 2.2 – Surrounding land uses

Direction	Description
North	The Site is bounded predominantly by agricultural land and field boundaries. To the north-of the Site are the Upper Cosmeston Farm Development and Ysgol Llyn Derw (Ysgol-y-Derw). Beyond these are further agricultural fields and scattered rural properties. The B4267 Lavernock Road runs immediately north of the Central Parcel, providing the principal access route through the area
East	To the east, agricultural land and local highway infrastructure bound the Site. The surrounding land remains predominantly rural in character with isolated farmsteads and agricultural holdings. The Glamorgan Coast lies immediately east of the Eastern Parcel, beyond which is the Bristol Channel.
South	To the south, the Site is bounded by agricultural land extending towards St Mary's Well Bay and the Bristol Channel coastline. The Bay Caravan Park is also located to the south and west of the Site. The coastline lies approximately 75 m south of the Central Parcel at its closest point and is protected by coastal defences. Local drainage ditches and field drainage features are present within the agricultural land to the south and convey surface water towards the coast.
West	To the west, the Site is next to agricultural fields and the settlement of Sully is located approximately 550 m west of the Western Parcel.

2.2. Topography

2.2.1. A topographic assessment been undertaken using available LiDAR DTM data (collected between 2020 and 2022), providing an overview of the Site's general elevation, slope direction and local topographic setting. A site-specific topographical survey is not available for this Site. Please refer to **Figure A.2** (**Annex A**).

Western Parcel

2.2.2. Ground levels in the Western Parcel are approximately 55 m above ordnance datum (AOD) in the west, falling towards approximately 25 m AOD in the north-east corner.

Eastern Parcel

2.2.3. The Eastern Parcel generally falls towards the southeast, in the direction of the coastline. Ground levels are approximately 33 m AOD at the highest point, gradually falling to approximately 22 m AOD in the southeast of the Parcel.

Central Parcel

2.2.4. The Central Parcel is shown to fall from north to south/southeast. Ground levels are approximately 36 m AOD in the northern part of the parcel, falling towards approximately 17 m AOD in the south/southeast.

Northern Parcel

2.2.5. The Northern Parcel is lower lying than the Western and Central Parcels. Ground levels are approximately 24 m AOD in the south of the parcel, falling towards approximately 21 m AOD in the northeast.

Summary

2.2.6. The LiDAR-derived topography indicates that the Northern Parcel gently falls towards the north-east, whilst the Western, Eastern and Central Parcels generally fall towards the south-east.

2.2.7. The nearest statutory main river, Sully Brook, is located approximately 250 m north of the Northern Parcel. Ground levels along Sully Brook are approximately 18–20 m AOD, compared with approximately 21–24 m AOD across the Northern Parcel, 17–36 m AOD across the Central Parcel, 22–33 m AOD across the Eastern Parcel and 25–55 m AOD across the Western Parcel.

2.2.8. Overall, the Site generally lies at a higher elevation than the adjacent main river corridor, although lower elevations occur within the southern parts of the Central Parcel.

2.2.9. The Site's topography influences the direction of overland flow and existing drainage pathways. The implications for flood risk and drainage are assessed in **Section 5** of this report.

2.3. Geology and Hydrogeology

2.3.1. The published geological and hydrogeological characteristics of the Site have been reviewed using data from the BGS and other public datasets, as listed in **Section 1.2**. A summary is provided in **Table 2.3**.

Table 2.3 – Geological summary

Geology	Geological/Hydrogeological Description	Source
Bedrock Geology	The Site is underlain by several bedrock units, including the Mercia Mudstone Group, Penarth Group, Blue Anchor Formation, Lavernock Shale Member, St Mary's Well Bay Member, Friars Point Limestone Formation and Gully Oolite Formation. These generally comprise mudstone, limestone, interbedded limestone and mudstone, conglomerate and related shallow marine or lacustrine sedimentary rocks.	BGS Geology Viewer (2026)
Superficial Geology	No superficial deposits are recorded beneath most of the Site on the BGS Geology Viewer. However, mapped superficial deposits are present within 200 m of the Site.	BGS Geology Viewer (2026)
Borehole Records	Two BGS borehole records (ST16NE5 and ST16NE72) are located within the Eastern Parcel, although a borehole log is publicly available for ST16NE5 only. The ST16NE5 record comprises two boreholes and indicates variable ground conditions, including soil/clay overlying limestone, shale and other rock strata. Groundwater was encountered within the deeper borehole, with a small quantity recorded at approximately 5.8 m below ground level and further water encountered at approximately 21.3 m below ground level. The record notes that drilling subsequently encountered a break and that the water drained away into the rock.	BGS GeoIndex (onshore) (2026)
Soil Type	LandIS Soilscapes mapping indicates that the Site is underlain by a mixture of soil types, including freely draining slightly acid but base-rich soils (Soilscapes 7), slowly permeable seasonally wet loamy and clayey soils (Soilscapes 18), slightly acid loamy and clayey soils with impeded drainage, and loamy and clayey floodplain soils with naturally high groundwater.	Landis Soilscapes (2026)
Aquifer Designation	NRW/GeoIndex mapping indicates that the Site is underlain by bedrock aquifers classified as Principal and Secondary B. Where superficial deposits are mapped, these are also classified as Principal and Secondary aquifers.	NRW/BGS Geoindex Aquifer Designation Wales (2026)
Groundwater Vulnerability	NRW/GeoIndex mapping indicates that the Site is located within an area of high groundwater vulnerability, associated with Principal and Secondary aquifers. The Site is not located within a Source Protection Zone (SPZ).	NRW/BGS Geoindex Groundwater Vulnerability Wales (2026)

2.4. Hydrology

2.4.1. A review of the NRW Flood Map for Planning (2026)[7] indicates that no statutory main rivers are located within the Site. The nearest statutory main river is Sully Brook, located approximately 250 m north of the Northern Parcel.

2.4.2. A review of the Ordnance Survey (OS) OpenMap (2026) indicates that an unnamed watercourse runs alongside the boundary of the Central Parcel, following part of the southern parcel boundary before continuing south towards St Mary's Well Bay. Please refer to **Figure A.3** (**Annex A**).

2.4.3. Based on site observations by the Project Team and publicly available mapping, there also appears to be a drainage ditch running along St Mary's Well Bay Road between the Western and Central Parcels. This is assumed to flow northwards. Its outfall is unknown and unmapped, but it appears it could drain towards a tributary of Sully Brook. This tributary system and connected watercourses are likely field ditches, draining much of the land to the north of B4267 Lavernock Road. This is also highlighted in **Figure A.3** (**Annex A**).

2.4.4. The Site and surrounding area also include an unnamed ordinary watercourse immediately east of the Central Parcel, which follows part of the parcel boundary before continuing south towards St Mary's Well Bay.

2.4.5. The Site is located approximately 75 m north of St Mary's Well Bay. The coastline in the vicinity of St Mary's Well Bay to Swanbridge is identified within the Severn Estuary Shoreline Management Plan 2 (SMP2)13 as Policy Unit CrHT 20 1.2, with a shoreline management policy of 'No Active Intervention/No Need to Defend'. The policy rationale states that the intent is to allow the natural behaviour of the coast. Coastal flood risk and the influence of the Site's proximity to the coast assessed further in **Section 5.5** of this report.

2.5. Existing Sewers and Drainage Infrastructure

2.5.1. A review of available utility plans provided by Technics Group, Drawing Reference SP25811-TEC-DR-0001, dated June 2025, has been undertaken to identify existing sewer, drainage and utility infrastructure within and adjacent to the Site and is presented in **Annex B**.

2.5.2. Dŵr Cymru Welsh Water (DCWW) asset plans, Map Reference 317732,168595, dated June 2026, have also been received and reviewed. These plans identify existing clean

[13] Severn Estuary Coastal Group (2017) Severn Estuary Shoreline Management Plan 2 (SMP2). Available at: https://severnestuarycoastalgroup.org.uk/shoreline-management-plan/ [Accessed: 15 October 2026]

water and sewerage infrastructure within and adjacent to the Site. The identified sewerage infrastructure in relation to the Site is presented in **Figure A.4** (**Annex A**)**.**

2.5.3. Findings associated with the sources identified above are provided in this section.

Sewers

2.5.4. The DCWW sewerage plans identify foul, surface water and combined sewer infrastructure within and adjacent to the Site, together with associated chambers, outfalls and other drainage features.

2.5.5. In its consultation response dated 29 July 2026, DCWW confirmed that a 1,800 mm public foul sewer crosses the northern part of the Eastern Parcel, running in a north-west to south-east direction. DCWW advises that access to the sewer is required at all times for maintenance and repair purposes and that no part of any building would be permitted within an indicative protection zone extending 9 m either side of the sewer centreline. DCWW notes that the required protection distance is indicative and should be confirmed following verification of the location and depth of the asset.

2.5.6. DCWW recommends that the location of the public sewer is verified through liaison with its Plan and Protect team and that its relationship with the Proposed Development is established. The location of the sewer and its associated protection requirements has therefore been considered within the design of the Proposed Development layout. DCWW also advises that some public sewers and lateral drains may not be shown on its records and that the presence of any additional assets should be confirmed where relevant.

Clean Water & Drainage infrastructure

2.5.7. The DCWW clean water asset plans identify existing water mains within and adjacent to the Site. A 3-inch 1940 water main is shown crossing the Central Parcel, running from Sutton Farm towards St Mary's Well Bay Caravan Park.

2.5.8. Additional clean water assets are shown along the surrounding highway network. This includes a 1.5-inch 1960 water main along B4267 Lavernock Road, immediately north of the Northern Parcel; a 4-inch 1997 water main along St Mary's Well Bay Road, between the Western and Central Parcels; and a 3-inch 1940 water main along Fort Road, immediately east of the Central Parcel.

2.5.9. DCWW's consultation response confirms that several public watermains cross the Site and advises that access to these assets is required at all times for maintenance and repair. Appropriate protection zones apply to the watermains, with the required distances dependent upon the individual asset. Utilities and geophysical surveys have been undertaken to inform the Proposed Development layout, and a 5 m buffer has been incorporated around the existing 3-inch 1940 water main to provide an

appropriate protection zone and maintain DCWW access where required. The locations of existing watermains and associated protection requirements have been considered within the design of the Proposed Development.

2.5.10. The available utility plans also identify further existing drainage infrastructure within and adjacent to the Site, including features associated with existing tracks, roads, field boundaries and local drainage routes. These features are illustrated in **Annex B**, where mapped.

2.5.11. Given the existing agricultural land use, the potential presence of private field drains, land drains and other informal drainage features has been considered. A utilities search and geophysical survey have been undertaken, alongside consultation with the tenant farmer, to identify existing underground infrastructure and drainage features. No additional drainage features have been identified through these investigations beyond those already recorded in the available site information.

Highway Drainage

2.5.12. The closest roads to the Site include B4267 Lavernock Road, St Mary's Well Bay Road and Fort Road. The B4267 Lavernock Road is located immediately north of the Site, while St Mary's Well Bay Road passes between the Western and Central Parcels. Fort Road is located to the east of the Site.

2.5.13. Based on available LiDAR/DTM data, road levels along Lavernock Road are approximately 40 m AOD in the west, falling to approximately 19 m AOD in the north-east. St Mary's Well Bay Road reaches a peak elevation of approximately 34 m AOD towards the centre, falling to approximately 30 m AOD in the south and approximately 28 m AOD in the north.

2.5.14. Surface water runoff from these roads is expected to generally follow the surrounding topography and be managed through existing highway drainage arrangements, including roadside gullies, carrier drains, culverts and associated outfalls where present.

2.5.15. Existing utility information has been reviewed and considered as part of this FCA. The implications for flood risk are discussed in **Section 5** of this report.

3. The Proposed Development

3.1. Key Components of the Proposed Development

3.1.1. The Proposed Development consists of the following elements:

- Ground mounted Solar Photovoltaic (PV) modules, with a total installed capacity of approximately 35 MW;
- Project Substation Compound, which will include substation, switching and control equipment, storage areas, vehicular parking, material laydown areas, perimeter fencing, lighting, security infrastructure and associated ancillary equipment. BESS would also be included within the Project Substation Compound;
- Balance of Solar System (BoSS) which comprises: inverters, transformers and switchgear;
- Ancillary infrastructure works including underground cables, boundary treatments, security equipment, weather stations, landscaping, biodiversity enhancement, access tracks, earthworks, surface water management, and any other works identified as necessary to enable the development;
- Permanent diversion of Public Footpath L1/5/2; and
- Associated safety and security infrastructure required for the construction, operation and decommissioning of the Proposed Development.

3.1.2. The Proposed Development will include solar PV modules on mounting structures consisting of steel poles piled into the ground. These would be located within the Central and Western Parcels.

3.1.3. The Western Parcel will also contain the Project Substation Compound; this will include electrical infrastructure (such as the transformers, switchgear and metering equipment), office space, material storage and operational monitoring and maintenance equipment. The BESS will be located within the compound. The overall size of the compound is anticipated to be approximately 60 m x 54 m giving a total area of 3,240 m².

3.1.4. The principal flood-sensitive elements comprise the Project Substation Compound, with the BESS and associated electrical infrastructure.

3.1.5. The Northern and Eastern Parcels will not directly include any permanent infrastructure and have been reserved for a temporary construction compound and ecological mitigation, respectively.

3.1.6. The operational lifespan of the Proposed Development is understood to be approximately 40 years.

3.1.7. An indicative layout of the Proposed Development is shown within **Figure 5.1** of the ES.

3.2. Vulnerability of Flooding

3.2.1. The Proposed Development comprises 'renewable energy infrastructure' and therefore falls within the 'Less Vulnerable' development category under TAN15.

3.2.2. Although the Proposed Development is classified as 'Less Vulnerable', the Project Substation Compound, transformers, kiosks/control equipment and associated electrical infrastructure are considered flood-sensitive assets. These assets are considered within the detailed flood risk assessment presented in **Section 5**.

4. Consultation, Policy and Guidance

4.1. Consultation

4.1.1. The assessment has been informed by consultation responses and ongoing stakeholder engagement. An overview of the approach to consultation is provided in **Chapter 2: Approach to the EIA** of the ES.

4.1.2. An EIA Scoping Report was submitted to the Vale of Glamorgan Council (hereafter, the 'Council') in June 2026 in accordance with the EIA Regulations, seeking confirmation of the proposed scope and methodology for the EIA in relation to the Proposed Development.

4.1.3. Consultation has also been directly undertaken with key stakeholders, namely NRW, the Vale of Glamorgan Council (hereafter the 'Council'), in its role as Lead Local Flood Authority (LLFA) and SAB and DCWW to inform this report.

4.1.4. A summary of the correspondence is provided in **Table 4.1**.

Table 4.1 – Consultation summary

Consultee	Summary of Enquiry Response and Scoping Opinion Response	Consideration in the ES
NRW	A generic flood risk enquiry was sent to NRW on **14 April 2026,** requesting information relating to historic flooding, groundwater flood risk, identified watercourses, flood risk management assets, flood studies and flood mapping associated with the Site. NRW subsequently provided a response to the EIA Scoping Opinion consultation dated **6 August 2026**. In relation to matters relevant to this FCA and ODS, NRW advised that potential hydrological, drainage and pollution pathways between the Site and identified watercourses should be considered throughout construction, operation and decommissioning. NRW also advised that a water feature risk assessment should consider any private water supplies or springs that may be present or affected by the Proposed Development. NRW further advised that measures should be incorporated to prevent contaminated firewater associated with the BESS from entering the ground, off-site drainage	A full FCA in **Section 5** has considered flood risk from all sources and provided suitable mitigation measures in line with NRWs comments. Drainage and pollution pathways have been considered within the ODS in **Section 7**.

Consultee	Summary of Enquiry Response and Scoping Opinion Response	Consideration in the ES
	networks or watercourses, with sufficient containment provided. NRW also advised that, where the BESS is located within an area at flood risk, consideration should be given to avoiding battery exposure during a flood event and ensuring that firewater containment measures remain effective. Potential effects on water quality, hydrology and hydrogeology, including during decommissioning, should also be considered.	
Lead Local Flood Authority (LLFA)	A flood risk enquiry was sent to the Council, acting as the LLFA and SAB, on **14 April 2026,** requesting information relating to local flood risk, historic flood incidents, ordinary watercourses, drainage infrastructure and any planned flood alleviation schemes affecting the Site. An initial response was received on **28 April 2026**. The LLFA recognized that solar farm developments '*commonly propose that rainfall falling on panels drains onto the ground beneath and between panel rows, with subsequent infiltration occurring in a manner intended to reflect the existing greenfield condition'*. However, it was also advised that further advice would need to be obtained via the formal pre-SAB and SAB process. This ODS will be used as part of the pre-SAB consultation process. The Council subsequently provided a response to the EIA Scoping Opinion consultation dated **1 July 2026**. The scoping response identified no tidal or fluvial flood risk at the Site, although areas of surface water flood risk are present. An FCA and ODS were recommended to support any planning application, including details of surface water management and SuDS to demonstrate that SAB approval can be achieved. It also recommended the relationship of Welsh Water assets to the proposals should be verified.	A full FCA in **Section 5** has considered flood risk from all sources and provided suitable mitigation measures in line. Surface water and its associated risks have been assessed as part of this. Drainage and SuDS have been considered within the ODS in **Section 7**. A pre-SAB application is to follow to receive formal advice and approach to receiving full SAB approval.

Consultee	Summary of Enquiry Response and Scoping Opinion Response	Consideration in the ES
DCWW	A utility enquiry was submitted to DCWW on **14 April 2026** requesting information relating to historic sewer flooding incidents, existing drainage assets, infrastructure constraints, easements, planned improvement works and sewer flood risk management schemes associated with the Site. DCWW Asset plans were received on **21 May 2026** and reviewed, identifying existing clean water and sewerage infrastructure within approximately 2 km of the Site.	Asset plans have been reviewed as part of the iterative design process and utilities have been avoided where suitable. The risk posed from a flooding perspective has been assessed within Section 5. The ODS does not propose interaction with any existing drainage assets.

4.2. Legislation, Policy and Guidance

4.2.1. This FCA and ODS has been informed by, and refers to where appropriate, the following legislation, policy and guidance documents.

Legislation

- Environmental Act (Wales), 2016[14];
- Flood and Water Management Act, 2010[15];
- Land Drainage Act, 1991[16];
- The Environmental Permitting (England and Wales) Regulations, 2016[17];
- The Sustainable Drainage (Approval and Adoption Procedure) (Wales) Regulations, 2018[18];
- The Water Environment (WFD) (England and Wales) Regulations, 2017[19];
- Water Industry Act, 1991[20];
- Water Resources Act, 1991[21]; and

[14] Environment (Wales) Act 2016. Available at: https://www.legislation.gov.uk/anaw/2016/3/contents [Accessed: 15 October 2026]
[15] Flood and Water Management Act 2010 (c. 29). Available at: https://www.legislation.gov.uk/ukpga/2010/29/contents [Accessed: 15 October 2026]
[16] Land Drainage Act 1991 (c. 59). Available at: https://www.legislation.gov.uk/ukpga/1991/59/contents [Accessed: 15 October 2026]
[17] The Environmental Permitting (England and Wales) Regulations 2016 (SI 2016/1154). Available at: https://www.legislation.gov.uk/uksi/2016/1154/contents [Accessed: 15 October 2026]
[18] The Sustainable Drainage (Approval and Adoption Procedure) (Wales) Regulations 2018 (WSI 2018/1077, W. 226). Available at: https://www.legislation.gov.uk/wsi/2018/1077/made [Accessed: 15 October 2026]
[19] The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (SI 2017/407). Available at: https://www.legislation.gov.uk/uksi/2017/407/contents [Accessed: 15 October 2026]
[20] Water Industry Act 1991 (c. 56). Available at: https://www.legislation.gov.uk/ukpga/1991/56/contents [Accessed: 15 October 2026]
[21] Water Resources Act 1991 (c. 57). Available at: https://www.legislation.gov.uk/ukpga/1991/57/contents [Accessed: 15 October 2026]

- Well-being of Future Generations (Wales) Act, 2015[22]

National Policies and Guidance

- TAN 15: Development, flooding and coastal erosion, 2025[1];
- PPW, Edition 12, 2024[2];
- Statutory National Standards for SuDS, 2018[23];
- Welsh Government Sustainable Drainage Statutory guidance, 2019[24]
- Welsh Government Climate change allowances and flood consequence assessments, 2026 [25]; and
- Defra Non-Statutory Technical Standards for SuDS[26].

Local/Regional Policies and Guidance

- Vale of Glamorgan Local Development Plan 2011 to 2026, 2017[27];
- Vale of Glamorgan Local Flood Risk Management Strategy, 2013[28];
- Vale of Glamorgan Flood and Coastal Erosion Risk Management Guidance, 2026[29]; and
- NRW South-East Wales Area Statement, 2020[30].

[22] Welsh Government (2015) Well-being of Future Generations (Wales) Act 2015. Cardiff: Welsh Government. Available at: https://www.gov.wales/well-being-future-generations-act-essentials-html [Accessed: 15 October 2026]
[23] Welsh Government (2018) Statutory National Standards for Sustainable Drainage Systems (SuDS) in Wales. Cardiff: Welsh Government. Available at: https://www.gov.wales/sites/default/files/publications/2019-06/statutory-national-standards-for-sustainable-drainage-systems.pdf [Accessed: 15 October 2026]
[24] Welsh Government (2026) Sustainable Drainage (SuDS): Statutory Guidance. Cardiff: Welsh Government. Available at: https://www.gov.wales/sites/default/files/publications/2026-03/sustainable-drainage-suds-statutory-guidance.pdf [Accessed: 15 October 2026]
[25] Welsh Government (2026) Flood Consequences Assessments: Climate Change Allowances. Cardiff: Welsh Government. Available at: https://www.gov.wales/sites/default/files/publications/2026-03/climate-change-allowances-and-flood-consequence-assessments.pdf [Accessed: 15 October 2026].
[26]Department for Environment, Food and Rural Affairs (2015) Sustainable Drainage Systems: Non-statutory Technical Standards for Sustainable Drainage Systems. London: Defra. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf [Accessed: 15 October 2026]
[27] Vale of Glamorgan Council (2017) Vale of Glamorgan Local Development Plan 2011–2026: Adopted LDP Written Statement. Barry: Vale of Glamorgan Council. Available at: https://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Policy/LDP/LDP-Adoption/Adopted-LDP-Written-Statement-June-2017-final-interactive-web-version.pdf [Accessed: 15 October 2026].
[28] Vale of Glamorgan Council (2026) Flood and Coastal Erosion Risk Management (FCERM). Barry: Vale of Glamorgan Council. Available at: https://www.valeofglamorgan.gov.uk/en/living/Flooding/Flood-and-Coastal-Erosion/Flood-and-Coastal-Erosion-Risk-Management-FCERM.aspx [Accessed: 15 October 2026]
[29] Vale of Glamorgan Council (2026) Local Flood Risk Management Strategy. Barry: Vale of Glamorgan Council. Available at: https://www.valeofglamorgan.gov.uk/en/living/Flooding/Flood-and-Coastal-Erosion/Local-Flood-Risk-Management-Strategy.aspx [Accessed: 15 October 2026].
[30] Natural Resources Wales (2026) South-East Wales Area Statement. Cardiff: Natural Resources Wales. Available at: https://naturalresources.wales/about-us/what-we-do/strategies-plans-and-policies/area-statements/south-east-wales-area-statement/?lang=en [Accessed: 15 October 2026]

4.3. Climate Change Guidance

4.3.1. The Welsh Government updated its climate change allowances for Flood Consequence Assessments in March 2026[26]. The guidance provides allowances for peak river flows, rainfall uplifts, sea level rise and wave action, and should be applied to relevant planning applications submitted from 1 April 2026.

4.3.2. The allowances are used to assess the potential effects of climate change over the lifetime of the development.

4.3.3. For development management proposals, TAN15 requires site-specific FCAs in flood risk areas to consider a range of climate change scenarios, including upper end estimates. The minimum expectation is to consider the design event using the central estimate and undertake sensitivity testing under the upper estimate where relevant.

4.3.4. For the Proposed Development, the most relevant climate change consideration is rainfall uplift for the assessment of surface water drainage. As the Site lies outside the mapped fluvial and coastal flood extents, peak river flow allowances, wave action allowances and sea level rise allowances are not directly applicable because the Proposed Development lies outside the mapped flood extents. Rainfall uplift has therefore been considered where relevant.

Rainfall Uplift Allowances

4.3.5. Rainfall uplift allowances apply across Wales and are used where rainfall is applied directly to hydraulic models, drainage assessments, small catchment assessments, surface water assessments or urban drainage systems. The Climate Change allowances guidance[27] states that drainage systems should be designed to ensure there is no increase in site runoff when assessed against the upper rainfall allowance.

4.3.6. The minimum expectation is for an FCA to demonstrate the risks/impacts for:

- 1% (1 in 100) fluvial/0.5% (1 in 200) tidal event + CC (central estimate) as the design event;
- 1% (1 in 100) fluvial/0.5% (1 in 200) + CC (upper estimate) to inform mitigation/resilience measures i.e. sensitivity testing;
- 0.1% (1 in 1000) extreme event + CC (central estimate) and show it can meet the tolerable conditions as set out in TAN15; and
- Surface water and small watercourses risk in zones 2 and 3.

4.3.7. The latest allowances for Rainfall Uplift are summarised in **Table 4.2**.

Table 4.2 - Rainfall uplifts for Wales

Epoch	Central	Upper
2050s (Present day – 2060)	20%	35%
2070s (2061-2125)	30%	40%

4.3.8. For the Proposed Development, the central rainfall uplift allowance of 30% for the 2070s epoch is considered applicable based on the anticipated operational lifetime of the Proposed Development. The 30% climate change allowance has therefore been adopted. The upper allowance of 40% should be considered as a sensitivity test where relevant.

5. Overview of Flood Risk

5.1. Introduction

5.1.1. This section assesses flood risk to and from the Proposed Development from all relevant sources, including fluvial, coastal, surface water and small watercourses, groundwater, sewers and drainage infrastructure, reservoirs and canals. The supporting flood risk mapping is presented within this section and within **Annex A**.

5.1.2. Where relevant, the assessment has been informed by the NRW Flood Map for Planning, available LiDAR/DTM topographic data, consultation responses and the description of the Proposed Development (see **Chapter 5: Project Description** of the ES) available at the time of writing.

5.1.3. The mapped flood zones include allowance for climate change and have therefore been used to inform the assessment of flood risk to the Proposed Development.

5.1.4. Each potential source of flooding is assessed separately, with the overall flood risk conclusions summarised in **Section 5.9** of this FCA. Where flood risk management or further design consideration is required, this is addressed in **Section 6** of this report.

5.2. Historical Flood Risk

5.2.1. At the time of writing, project-specific historical flood information had not been received from the Council (LLFA). A flood risk enquiry was submitted on 14 April 2026, with an initial response received on 28 April 2026. Any project-specific historical flood information received prior to determination of the application should be reviewed and incorporated into this assessment, where appropriate.

5.2.2. A review of the NRW Flood Map for Planning – Recorded Flood Extents (2026) indicates that there are no recorded historical flood extents within the Site or its immediate surroundings.

5.2.3. A review of publicly available information, including the Vale of Glamorgan Local Flood Risk Management Strategy, indicates that significant flood events occurred across the wider Vale of Glamorgan during October 1998, July 2007 and December 2012/January 2013, resulting from a combination of main river, ordinary watercourse, surface water, groundwater and sewer flooding[31].

[31] https://www.valeofglamorgan.gov.uk/Documents/Living/Environment/Flood-and-coastal-erosion-risk/VoGC-LFRMS.pdf

5.2.4. The Strategy identifies flooding associated with the Sully Brook catchment, including impacts to Sully village and sections of Lavernock Road and Sully Road during the October 1998 and December 2012/January 2013 flood events. These recorded flood incidents occurred approximately 900 m northwest of the Site and at elevations approximately 30 m lower than the adjacent Site. There is no evidence that these historical flood events extended to, or affected, the Site.

5.2.5. A review of the Lavernock Road Section 19 Flood Investigation Report[32] (May 2023) identified a further flood event on 23 December 2020, affecting Lavernock Road approximately 375 m northeast of the Northern Parcel. The affected section of highway is situated at approximately 13 m AOD, around 8 m lower than the Site within the Northern Parcel, where ground levels are approximately 20 m AOD. The investigation attributed flooding to local highway drainage exceedance, with no evidence that flooding propagated towards or affected the Site.

5.2.6. Based on the available information, there is no evidence of recorded historical flooding affecting the Site.

5.2.7. Whilst historical flood events have occurred within the wider Sully Brook catchment and on nearby sections of the highway network, these incidents are located between approximately 250 m and 900 m from the Site and at significantly lower ground elevations than the Site. The available evidence therefore indicates that these events are associated with local topography and drainage conditions rather than presenting a direct historical flood risk to the Site.

5.2.8. Consequently, historical flooding is not considered to present a significant constraint to the Proposed Development or its flood-sensitive receptors.

5.3. Surface Water Flood Risk

5.3.1. Surface water flooding occurs when rainfall is unable to infiltrate into the ground or enter drainage systems, resulting in overland flow across the land surface. Small watercourse flooding may also occur where minor watercourses, ditches or field drainage features exceed capacity during rainfall events.

[32] https://www.valeofglamorgan.gov.uk/Documents/Living/Flooding/Section-19/2021s0104-Lavernock-Road-Section-19-v4.pdf

5.3.2. For surface water and small watercourses, the NRW Flood Map for Planning (2026) identifies the following:

Flood Zone 1

- Areas with less than a 0.1% annual probability of flooding, equivalent to less than a 1 in 1,000 chance of flooding in any given year, including the effects of climate change. These areas are located outside mapped Flood Zones 2 and 3.

Flood Zone 2

- Areas with between a 0.1% and 1% annual probability of flooding, equivalent to between a 1 in 1,000 and 1 in 100 chance of flooding in any given year, including the effects of climate change.

Flood Zone 3

- Areas with greater than a 1% annual probability of flooding, equivalent to greater than a 1 in 100 chance of flooding in any given year, including the effects of climate change.

5.3.3. A review of the NRW Flood Map for Planning (2026) indicates that areas of surface water and small watercourse flood risk are present within and adjacent to the Site as shown in **Figure A.5** (**Annex A**). These areas are generally localised and coincide with lower-lying drainage corridors, field boundaries and existing overland flow routes.

5.3.4. Due to the scale of the Proposed Development, the surface water flood risk has been assessed separately for the Northern, Central, Eastern and Western Parcels.

Western Parcel

5.3.5. The Western Parcel contains the principal surface water flood risk constraints within the Site. Ground levels fall from approximately 55 m AOD in the west to 25 m AOD in the north-east, resulting in more significant overland flow paths than elsewhere on the Site.

5.3.6. NRW Flood Map for Planning mapping identifies localised Flood Zones 2 and 3 associated with ordinary watercourses, drainage ditches, field drainage features and existing corridors.

5.3.7. Site walkovers and aerial footage indicates an area of poor drainage and standing surface water immediately north of the proposed Project Substation Compound. This is considered a local drainage constraint and is discussed within the ODS in **Section 7**.

5.3.8. The Western Parcel is considered to be at generally **Low** risk from surface water flooding across the majority of the parcel, with localised areas of medium risk in the north-east corner associated with existing drainage corridors, localised depressions in terrain, and

the identified area of poor drainage immediately north of the proposed Project Substation Compound. It should be noted that the compound is located entirely outside the mapped flood extents. This surface water risk appears to be entirely generated on site and therefore will be addressed as part of the drainage strategy.

5.3.9. Existing drainage pathways should be maintained where practicable and flood-sensitive infrastructure should avoid mapped flow routes wherever possible. Further mitigation measures have been outlined in **Section 6**.

Eastern Parcel

5.3.10. The Eastern Parcel is predominantly located outside areas of mapped surface water and small watercourse flood risk. However, the NRW Flood Map for Planning identifies localised Flood Zones 2 and 3 associated with existing drainage features and overland flow routes around the parcel boundaries, with some mapped extents encroaching into the Site.

5.3.11. Ground levels within the Eastern Parcel generally fall towards the south-east, from approximately 33 m AOD at the highest point to approximately 22 m AOD in the south-east. Surface water runoff is therefore expected to generally follow the existing topography towards the lower-lying south-eastern parts of the parcel and associated drainage features.

5.3.12. The most notable mapped surface water and small watercourse flood risk is associated with drainage corridors around the northern/north-eastern and southern boundaries of the parcel. These comprise relatively narrow and localised flow routes, while the majority of the parcel remains outside the mapped flood extents.

5.3.13. Overall, surface water and small watercourse flood risk within the Eastern Parcel is considered to be generally **Low** and is not expected to represent a significant constraint to the Proposed Development.

Northern Parcel

5.3.14. The Northern Parcel is predominantly located within Flood Zone 1 for surface water and small watercourse flood risk. However, localised areas of Flood Zones 2 and 3 are present, principally along its northern boundary, associated with existing drainage features, field boundaries and lower-lying areas, including alongside sections of the adjacent highway network.

5.3.15. The Northern Parcel falls from approximately 24 m AOD in the south-of the parcel to approximately 21 m AOD in the north-east, with surface water runoff expected to follow the existing topography.

5.3.16. Overall, surface water flood risk within the Northern Parcel is considered **Low** and is not expected to represent a significant constraint to the Proposed Development.

Central Parcel

5.3.17. The Central Parcel is also generally located outside significant areas of mapped surface water flood risk. Limited localised surface water flow routes are present and are principally associated with existing drainage features, field boundaries, localised low-lying areas within the Site, and lower-lying sections of the adjacent highway network.

5.3.18. Ground levels fall from approximately 36 m AOD in the north to 17 m AOD towards the south and south-east, directing runoff towards existing drainage features. Runoff is likely to be conveyed via the mapped unnamed ordinary watercourse and associated drainage features before ultimately discharging towards St Mary's Well Bay and the Bristol Channel.

5.3.19. Overall, surface water flood risk within the Central Parcel is considered **Low**, with no significant constraints anticipated.

Overall Assessment

5.3.20. Overall, the Site is considered **Low** risk from surface water flooding, with localised areas of increased risk principally associated to the Northern Parcel and the Western Parcel. These areas are limited in extent and have been considered during the design of the Proposed Development and ODS, including the siting of flood-sensitive infrastructure, management of existing drainage features and confirmation of appropriate surface water drainage measures.

5.4. Fluvial Flood Risk

5.4.1. Fluvial flooding occurs when water levels in rivers, streams or watercourses exceed channel capacity and flood the surrounding land. For the purposes of this assessment, fluvial flood risk has been reviewed using the NRW Flood Map for Planning (2026), available site information and the topography setting of the Site.

5.4.2. The NRW Flood Map for Planning (2026) identifies areas of flood risk as follows:

- **Flood Zone 1** comprises land assessed as having a low probability of flooding from rivers (less than 0.1% annual probability), (located outside the mapped fluvial Flood Zone 2 and Flood Zone 3 extents);
- **Flood Zone 2** comprises of areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding from rivers each year, including the effects of climate change; and
- **Flood Zone 3** comprises land with more than 1% (1 in 100) chance of flooding from rivers each year, including the effects of climate change.

5.4.3. As shown in **Figure A.6** (**Annex A**), the Site is located entirely within Flood Zone 1 for fluvial flooding, with no mapped fluvial Flood Zones 2 or 3 extending into the Site boundaries. No statutory main rivers are present within the Site. The nearest statutory main river is Sully Brook, located approximately 250 m north of the Northern Parcel.

5.4.4. A review of OS OpenMap (2026) indicates the presence of ordinary watercourses within and adjacent to the Site. These comprise an unnamed drain within the Central Parcel, an unnamed ordinary watercourse located immediately east of the Central Parcel which follows part of the parcel boundary before continuing south towards St Mary's Well Bay, and a drainage ditch running along St Mary's Well Bay Road between the Western and Central Parcels. The ditch is assumed to flow northwards towards the wider tributary system associated with Sully Brook, although its outfall is currently unmapped. These features are considered to function primarily as local land drainage channels, serving agricultural land and field drainage catchments north of Lavernock Road.

5.4.5. Based on the NRW Flood Map for Planning (2026), no mapped fluvial Flood Zone 2 or Flood Zone 3 extents associated with these ordinary watercourses affect the Site. Furthermore, there is no evidence of a defined floodplain associated with these features at the Site. Consequently, whilst the ordinary watercourses provide local drainage functions, they are not considered to represent a significant source of fluvial flood risk to the Site.

5.4.6. Based on the NRW Flood Map for Planning (2026), the Site lies entirely within Flood Zone 1 for fluvial flooding and is located outside mapped fluvial Flood Zone 2 and Flood Zone 3 extents. The mapped fluvial flood zones are associated with Sully Brook and other statutory main rivers located outside the Site. Although Sully Brook is located approximately 250 m north of the Site (approximately 9–11 m lower than the adjacent Northern Parcel), the intervening topography and absence of any mapped fluvial floodplain affecting the Site indicate that fluvial flooding from Sully Brook is not considered to pose a risk to the Proposed Development.

5.4.7. Therefore, fluvial flood risk to the Proposed Development is considered **Low**. The Site is located outside the mapped fluvial Flood Zone 2 and Flood Zone 3 extents associated with both statutory main rivers and the ordinary watercourses identified within and adjacent to the Site, including the unnamed drain within the Central Parcel, the ordinary watercourse immediately east of the Central Parcel, and the drainage ditch along St Mary's Well Bay Road. These watercourses are considered to function predominantly as local land drainage features and there is no evidence of a defined floodplain affecting the Site. Accordingly, no additional mitigation measures are considered necessary in relation to flooding from statutory main rivers or ordinary watercourses.

5.5. Coastal Flood Risk

5.5.1. Coastal flooding can occur when high sea levels, storm surge and/or wave action result in inundation of coastal land. The closest part of the Site is the southern boundary of the Central Parcel, located approximately 75 m north of the Glamorgan Coast at St Mary's Well Bay. The wider Swanbridge frontage is located to the south-west. Coastal flood risk has therefore been considered as part of this FCA.

5.5.2. For flooding from the sea, the NRW Flood Map for Planning (2026) identifies the following:

Flood Zone 1

- Areas with a less than 0.1% annual probability of flooding, equivalent to a less than 1 in 1,000 chance of flooding in any given year, including the effects of climate change.

Flood Zone 2

- Areas with between 0.1% and 0.5% annual probability of flooding, equivalent to between a 1 in 1000 and 1 in 200 chance of flooding in any given year, including the effects of climate change.

Flood Zone 3

- Areas with greater than a 0.5% annual probability of flooding, equivalent to greater than a 1 in 200 chance of flooding in any given year, including the effects of climate change.

5.5.3. The NRW Flood Map for Planning (2026)[7], as shown in **Figure A.7** within Annex A, indicates that the entire Site is located with Flood Zone 1 for coastal flooding, with no mapped sea Flood Zone 2 and Flood Zone 3 extents within the Site. The nearest mapped coastal flood zone is located approximately 75 m south of the Central Parcel, associated with St Mary's Well Bay, where Flood Zone 3 is mapped.

5.5.4. Available LiDAR/DTM data indicates that the Site is elevated above the adjacent coastal floodplain. Ground levels within the Site range from approximately 21 m AOD in the lower-lying Northern Parcel to approximately 56 m AOD in the higher Western Parcel. The Central Parcel, located closest to the mapped coastal flood zone at St Mary's Well Bay, slopes from approximately 36 m AOD in the north to approximately 22 m AOD in the south and south-east.

5.5.5. The mapped coastal Flood Zone 3 extent at St Mary's Well Bay is associated with the low-lying coastal frontage to the south of the Site. The southern part of the Central Parcel remains elevated at approximately 22 m AOD, providing a substantial level difference above the adjacent mapped coastal floodplain. On this basis and given that

the mapped coastal flood extent does not encroach into the Site, direct tidal/coastal inundation of the Proposed Development is not anticipated based on the available NRW mapping.

5.5.6. The Site falls within Shoreline Management Plan 20 – Lavernock Point to St Anne's Head[33]. The coastline in the vicinity of St Mary's Well Bay to Swanbridge is identified as Policy Unit CRhT 20 1.2, with a shoreline management policy of No Active Intervention/No Need to Defend. The policy rationale states that the intent is to allow the natural behaviour of the coast.

5.5.7. The adjacent frontage at Swanbridge East is identified as Policy Unit CRhT 20 1.3. The SMP policy indicates Hold the Line in the short term only. However, the medium-term and long-term policies for this frontage are identified as No Active Intervention. The policy rationale indicates that the short-term intent is to maintain, but not upgrade, existing defences, with the medium to long-term intent allowing the natural behaviour of the coast.

5.5.8. NRW Flood Map for Planning identify flood defence locations along parts of the nearby coastal frontage, including around Swanbridge. The Proposed Development also lies outside the mapped coastal Flood Zone 2 and Flood Zone 3 extents, and the mapped coastal flood extent does not encroach into the Site. On this basis, and given the available NRW flood mapping, direct coastal flooding is not anticipated to affect the Proposed Development under present-day conditions. Future coastal flood risk and the potential influence of climate change are considered separately in Sections 4.3 and 5.5.9.

5.5.9. Sea level rise and wave action allowances are discussed in **Section 4.3**. Given the SMP policy context and the Site's proximity to the Glamorgan Coast, future coastal change and sea level rise should continue to be considered as the design progresses, particularly in relation to lower-lying land, access routes and any infrastructure located closest to the coastal margin. Based on the fact the Site is elevated by approximately 22 m above the coastal area associated with Flood Zone 3 it is also not anticipated that there would be any further residual risk.

5.5.10. On the basis that the whole Site is located outside the mapped sea flood zones, the nearest mapped coastal Flood Zone 3 is located approximately 75 m south of the Central Parcel, and the Site is elevated above the adjacent coastal floodplain, the risk of flooding from the sea to the Proposed Development is considered **Low**.

[33] Swansea and Carmarthen Bay Coastal Engineering Group | South Wales

5.6. Groundwater Flood Risk

5.6.1. Groundwater flooding can occur when groundwater levels rise above ground level or enter below ground structures, excavations or drainage systems. Groundwater flood risk is influenced by geology, soil permeability, groundwater levels, aquifer characteristics and local topography.

5.6.2. BGS GeoIndex mapping[3] indicates that the Site is underlain by Secondary B bedrock aquifers. The presence of groundwater is an important consideration for the Site, particularly in relation to drainage design, infiltration potential and protection of the water environment. Groundwater flood risk has therefore been assessed separately using the available groundwater flood susceptibility information.

5.6.3. The Vale of Glamorgan Council Local Flood Risk Management Strategy[29] identifies that groundwater flood risk within the Vale is currently poorly understood, with limited historic evidence available. The strategy notes that predicted future susceptibility to groundwater flooding is primarily based on generic national geological mapping. The groundwater susceptibility mapping presented within the strategy indicates that the Site and surrounding area are within an area where less than 25% of the land is susceptible to groundwater flooding. This indicates a relatively low susceptibility to groundwater flooding based on the available strategic mapping.

5.6.4. LandIS Soilscapes[9] mapping identifies a mixture of freely draining and slowly permeable soils across the Site. Whilst Soilscapes mapping only provides a broad indication of soil characteristics, groundwater flood susceptibility assessment has therefore been assessed based on the available strategic mapping and site-specific drainage information only.

5.6.5. The principal receptors in relation to groundwater flood risk are the flood-sensitive elements of the Proposed Development, including the Project Substation Compound, underground cabling, access tracks and associated electrical infrastructure. The solar PV panels will be mounted on driven steel piles, whilst transformer stations will be mounted on concrete pads or columns surrounded by permeable hardstanding, reducing their susceptibility to groundwater emergence. However, associated infrastructure, including underground cabling, access tracks and shallow foundations, may still be affected by localised groundwater emergence or waterlogging where present.

5.6.6. Potential pathways for groundwater flooding include groundwater emergence at or near ground level, or shallow groundwater affecting excavations, foundations, cable trenches, access tracks and drainage infrastructure. The available mapping indicates that less than 25% of the land within and surrounding the Site is susceptible to groundwater flooding, and no site -specific groundwater flooding records have been

identified. On this basis, widespread groundwater emergence is not anticipated to represent a significant constraint to the Proposed Development

5.6.7. At the time of writing, no site-specific groundwater monitoring information has been provided for review. Where below-ground infrastructure, excavations, cable trenches or infiltration-based SuDS are proposed, site-specific ground investigation, groundwater observations and infiltration testing should be undertaken where required to confirm local groundwater conditions and the depth to local groundwater table.

5.6.8. Based on the information available, groundwater flood risk to the Proposed Development is considered **Low**. Where mitigation or further design consideration is required, this is addressed in **Section 6** of this FCA.

5.7. Flood Risk from Sewers and Drainage Infrastructure

5.7.1. Flooding from sewers and drainage infrastructure can occur where existing systems become blocked, overloaded or damaged, or where their capacity is exceeded during rainfall events. Existing drainage features may also influence local surface water flow pathways where they are obstructed or altered.

5.7.2. Existing sewer and drainage infrastructure within and adjacent to the Site is described in **Section 2.5** and illustrated on **Figure A.4** (**Annex A**). This includes public sewerage infrastructure, water company assets, ordinary watercourses, drainage ditches and other local drainage features. These assets have been considered in assessing potential flood risk to the Proposed Development.

Sewer Flooding

5.7.3. DCWW has confirmed that the Site is crossed by a 1,800 mm public sewer and that the surrounding area is served by a combination of foul, surface water, combined and other sewerage infrastructure. The location of existing sewerage infrastructure and the Site is shown on **Figure A.4** (**Annex A**). There is no available evidence of sewer flooding affecting the Site and, on this basis, the risk of flooding from the public sewerage network is considered **Low**.

5.7.4. The public sewer crossing the Site nevertheless represents a development consideration. As discussed in **Section 2.5**, DCWW requires continued access to the sewer and identifies an indicative protection zone extending 9 m either side of the sewer centreline, subject to verification of its location and depth. The presence of the public sewer and DCWW's associated protection requirements have been considered within the final development layout. The precise alignment and depth of the sewer will be verified through consultation with DCWW and ensure compliance with the applicable protection requirements prior to construction.

Drainage Infrastructure

5.7.5. Existing drainage features within and adjacent to the Site are shown on **Figure A.4** (**Annex A**). Surface water runoff is expected to follow the existing topography towards these drainage features and lower-lying areas. Obstruction, removal or alteration of existing drainage routes could modify local flow pathways and increase flood risk locally or elsewhere.

5.7.6. Existing drainage routes should therefore be retained and maintained where practicable, with any interaction between the Proposed Development and existing drainage infrastructure considered as the design progresses. Further mitigation and drainage design requirements are discussed in **Section 6** and the ODS in **Section 7**.

Highway Drainage

5.7.7. The principal highways surrounding the Site comprise B4267 Lavernock Road, St Mary's Well Bay Road and Fort Road. Available topographic and drainage information indicates that runoff from these highways would generally follow the surrounding topography towards existing highway drainage features and lower-lying drainage corridors.

5.7.8. Based on available DTM data, road levels along B4267 Lavernock Road vary from approximately 40 m AOD in the west to approximately 19 m AOD in the north-east. St Mary's Well Bay Road reaches a peak elevation of approximately 34 m AOD towards the centre, falling to approximately 30 m AOD to the south and approximately 28 m AOD to the north. These levels are broadly comparable to, or slightly lower than, the adjacent Site elevations, with the Proposed Development generally located on similar or marginally higher ground. This indicates that highway runoff is unlikely to be preferentially directed onto the Proposed Development, with overland flow generally following the natural topography towards existing drainage corridors and lower-lying areas.

5.7.9. The reviewed utility and drainage information indicates that existing highway drainage features are present along and adjacent to the local road network. Where highway drains, gullies, ditches, culverts or drainage connections are present, these are likely to convey surface water runoff from the carriageway and adjacent land towards lower-lying drainage corridors, consistent with the surrounding topography.

5.7.10. The receptor in relation to highway drainage flooding would be the Proposed Development, particularly any access tracks, site entrances, cabling routes or flood-sensitive infrastructure located close to existing highways or low points. However, based on the available information, the local roads generally fall away from the main developable areas and there is no indication that that highway drainage presents a significant flood risk constraint to the Proposed Development.

5.7.11. Any interaction between proposed access arrangements, site drainage, existing highway drainage assets, roadside ditches and local low points should be reviewed as the design progresses. This is particularly relevant where access tracks connect to the local highway network or where works are proposed near existing highway drainage features.

5.7.12. Overall, based on the available utility and drainage information, topographic data and consultation information, flood risk from sewers, existing drainage infrastructure and highway drainage is considered **Low to medium locally**. This assessment should be reviewed against the final development layout at the detailed drainage design stage, following confirmation of relevant asset locations and protection requirements.

5.8. Flood Risk from Other Artificial Sources

Reservoirs

5.8.1. Reservoir flooding can occur as a result of overtopping or structural failure of a reservoir, lake or impounded waterbody. Although the probability of reservoir failure is generally low, the potential consequences can be significant and therefore been considered as part of this FCA.

5.8.2. NRW Reservoir Flood Map for Planning mapping has been reviewed and indicates that the Site is not located within a mapped reservoir flood extent. A review of aerial imagery and topographic data also identifies several nearby lakes and ponds, including the lake at Cosmeston Lakes Country Park to the west of the Site. These waterbodies are located at lower elevations than the Proposed Development and appear to drain naturally towards Sully Brook and the wider local drainage network. There is no evidence that these features are hydraulically connected to the Proposed Development in a manner that would present a flood risk to the Site.

5.8.3. On this basis, and considering the relative topography, drainage connectivity and absence of any mapped reservoir inundation extents affecting the Site, the risk of flooding from reservoirs and other artificial impounded waterbodies is considered **Negligible** and has not been considered further within this assessment.

Canals

5.8.4. Canal flooding can occur as a result of overtopping, embankment failure, blockage or operational issues associated with canal infrastructure

5.8.5. A review of available mapping indicates that there are no canals located within or immediately adjacent to the Site. The nearest canal is the Monmouthshire & Brecon Canal, located approximately 22 km northeast of the Northern Parcel.

5.8.6. Given the significant distance between the Site and the nearest canal, and the absence of any canal infrastructure within or adjacent to the Site, the risk of flooding from canals is considered **Negligible** and has not been considered further within this assessment.

5.9. Summary of Flood Risk

5.9.1. A summary of the flood risk sources assessed within this FCA is provided in **Table 5.1**. This identifies the principal flood sources, the assessed level of risk to the Proposed Development and whether specific flood risk management measures are required. Where mitigation or further design consideration is required, this is discussed further in **Section 6**.

Table 5.1 - Summary of flood risk

Flood Source	Overall Risk to Receptors	Risk Management Measures Required?	Summary
Historic Flooding	Low	No	No recorded historic flood extents within the Site. Nearby historic flood events occurred at significantly lower elevations and did not affect the Proposed Development.
Surface water and small watercourses	Low, with localised areas of increased risk	Yes	Localised surface water flow routes are present, primarily along existing drainage corridors and field boundaries. The Western Parcel contains the principal constraints, including an area of poor drainage north of the proposed Project Substation Compound within the Site.
Fluvial flooding	Low	No	The Site lies entirely within Flood Zone 1. No significant fluvial flood risk to the Proposed Development has been identified.
Coastal/tidal flooding	Low	No	The Site is outside mapped sea flood extents. Although coastal flood zones occur south of the Site, ground levels provide adequate separation, and no significant coastal flood risk has been identified.

Flood Source	Overall Risk to Receptors	Risk Management Measures Required?	Summary
Groundwater flooding	Low	Yes	Low groundwater susceptibility (less than 25% of land susceptible). Ground investigation and groundwater monitoring have been recommended to inform mitigation measures for buried infrastructure.
Sewer flooding	Low	No	Public sewerage infrastructure is located adjacent to, but not within, the main development areas. No significant sewer flood risk has been identified.
Existing drainage infrastructure	Low to medium locally	Yes	Measures have been recommended and the design process has considered and avoided relevant utilities. Existing drains, ditches and field drainage should be retained where practicable and considered during detailed drainage design to maintain existing flow routes.
Highway drainage	Low	No	Existing highway drainage is expected to continue to manage road runoff under the ongoing maintenance of the highway authority. No significant flood risk to the Proposed Development has been identified.
Reservoir flooding	Negligible	No	The Site lies outside mapped reservoir inundation extents.
Canal flooding	Negligible	No	No canals are located within or adjacent to the Site.

6. Flood Risk Management Measures

6.1. Introduction

6.1.1. Following a review of flood risk to and from the Site presented in **Section 5**, this section outlines the flood risk avoidance, mitigation and resilience measures incorporated into the design of the Proposed Development. These measures have been considered to manage flood risk throughout the anticipated operational lifetime of the Proposed Development, accounting for the potential effects of climate change, without increasing flood risk elsewhere.

6.1.2. The assessment presented in **Section 5** indicates that the principal flood risk considerations relate to surface water and small watercourse flooding, local drainage features, overland flow routes and the relationship between flood-sensitive infrastructure and mapped flood risk areas. Flood risk from fluvial, coastal/tidal, groundwater, sewerage/drainage infrastructure, reservoirs and canals are considered negligible to low based on the available information.

6.1.3. The flood-sensitive elements of the Proposed Development include the Project Substation Compound, transformers, inverters, kiosks/control equipment, access tracks and associated electrical infrastructure. The design has considered the location of these elements in relation to mapped flood risk areas, with flood-sensitive infrastructure located outside mapped surface water and small watercourse Flood Zones 2 and 3 where practicable.

6.1.4. Mitigation against fluvial and coastal flood risk sources are not required for the Proposed Development. However, as a standard measure, and to mitigate against residual risk, the Finished Floor Level (FFL) of the buildings within the Project Substation Compound are recommended to be raised at least 150-300 mm above existing ground levels, where possible.

6.1.5. The design of the Proposed Development incorporates flood resilience through the elevation of solar PV modules above existing ground levels. As detailed in **Chapter 5: Project Description** of the ES, the lowest part of the solar PV modules will be positioned approximately 800 mm above ground level, with individual module heights influenced by site-specific considerations, including flood risk, historic flood levels and local topography. This arrangement provides an inherent degree of resilience to shallow surface water flooding and localised overland flows.

6.1.6. The design of the Proposed Development has taken account of the identified flood risk constraints, including mapped surface water and small watercourse flood extents, existing drainage features and overland flow routes. The development layout has been designed to avoid areas of identified flood risk where practicable, with appropriate

drainage and flood resilience measures incorporated to manage residual risks. These measures will be implemented as part of the Proposed Development to ensure that flood risk is appropriately managed throughout its operational lifetime.

6.2. Flood Risk Avoidance, Mitigation and Resilience Measures

Surface Water and Small Watercourses Flood Risk

6.2.1. Flood-sensitive infrastructure will be located outside mapped surface water and small watercourse Flood Zone 2 and Flood Zone 3 extents wherever practicable. For the Proposed Development, the Project Substation Compound, transformer stations and associated electrical infrastructure have been sited to minimise exposure to these sources of flood risk. The proposed layout therefore incorporates flood-risk avoidance as a principal mitigation measure.

6.2.2. Existing overland flow routes, drainage ditches and field drainage features will be retained where practicable to maintain existing drainage pathways across the Site. Within the Western Parcel, the identified area of poor drainage immediately north of the proposed Project Substation Compound has been considered within the development layout, with no infrastructure proposed within the identified flow path. An area immediately south of this flow path has also been reserved for a drainage basin, with the remaining area retained as undeveloped land.

6.2.3. Where new field crossings of existing open drainage features are required, suitable culverts or other appropriate drainage measures will be incorporated to maintain existing flow paths and hydraulic connectivity. These arrangements will ensure that existing drainage routes are maintained and that the Proposed Development does not obstruct or adversely alter established surface water flow pathways.

6.2.4. Surface water runoff generated by the Proposed Development will be managed through the proposed drainage arrangements, incorporating suitable SuDS, attenuation and discharge measures. These arrangements will manage runoff in accordance with the existing drainage characteristics of the Site, with exceedance flows appropriately routed to minimise the potential for increased flood risk elsewhere.

6.2.5. The above principles are discussed further in **Section 7** of this report (outline surface water drainage statement).

Groundwater Flood Risk

6.2.6. Groundwater flood risk has been assessed to be low based on the available information and has been considered within the design of the Proposed Development. The development predominantly comprises above-ground infrastructure, limiting potential interaction with groundwater. Where below-ground infrastructure or infiltration-based

drainage is incorporated, site-specific ground investigation, including groundwater level observations where necessary, will be undertaken to verify local groundwater conditions and confirm the suitability of the proposed drainage arrangements.

6.2.7. Underground electrical infrastructure will incorporate appropriate protection measures against potential localised groundwater emergence or prolonged waterlogging, where required. These measures will be informed by the identified ground conditions and will ensure that below-ground infrastructure remains appropriately protected throughout the operational lifetime of the Proposed Development.

Drainage Infrastructure and Utilities

6.2.8. Existing drainage features, utilities and field drainage infrastructure have been considered within the design of the Proposed Development. Existing drainage pathways will be retained where practicable and where diversions or crossings are necessary, appropriate measures will be incorporated to maintain existing drainage functionality. The identified DCWW sewerage and water supply infrastructure has also been considered, with the precise alignment and applicable protection requirements of the public sewer to be verified prior to construction.

6.2.9. An operational inspection and maintenance regime will be implemented to ensure that the proposed drainage infrastructure continues to function effectively throughout the operational lifetime of the Proposed Development. This will include the inspection and maintenance of SuDS features, drainage channels, attenuation infrastructure and associated drainage pathways, as appropriate.

6.3. Safe Access and Egress

6.3.1. The proposed access tracks have been designed with consideration of existing surface water flow routes and drainage pathways. Access tracks will avoid mapped surface water flow routes where practicable and will be arranged to minimise obstruction of existing drainage pathways, reducing the potential for localised flooding and maintaining access throughout the operational lifetime of the Proposed Development.

6.3.2. Where access routes cross existing drainage features, appropriate drainage measures should be incorporated to maintain safe access during operation and maintenance.

6.4. Summary of Mitigation Requirements

6.4.1. Flood risk has been considered throughout the design of the Proposed Development, with appropriate avoidance, mitigation and resilience measures incorporated to address the identified flood risk constraints. These include the siting of flood-sensitive infrastructure outside mapped flood risk areas where practicable, elevation of solar PV modules above existing ground levels, retention of existing drainage pathways,

provision of suitable SuDS and stormwater attenuation measures, and incorporation of appropriate drainage arrangements at access crossings. Subject to the implementation and ongoing maintenance of these measures, the Proposed Development is expected to remain safe throughout its operational lifetime without increasing flood risk elsewhere.

6.4.2. The potential for the Proposed Development to increase flood risk elsewhere has been considered through the assessment of existing surface water flow pathways and the proposed drainage arrangements. As the Proposed Development is located in fluvial Flood Zone 1, there is no predicted loss of floodplain and therefore flood risk impact elsewhere.

6.4.3. The development has been designed to retain existing drainage routes where practicable, with surface water runoff managed through the proposed SuDS and stormwater attenuation measures, as detailed in **Section 7**. Although localised areas of the Site fall within mapped surface water and small watercourse Flood Zones 2 and 3, the Proposed Development layout has sought to avoid these areas for flood-sensitive infrastructure wherever practicable. The implications of these mapped flood extents have been considered in accordance with the requirements of TAN15.

7. Outline Surface Water Drainage Statement

7.1. Drainage Statement Overview

7.1.1. This section sets out the conceptual proposals for surface water drainage for this Proposed Development. This ODS has been developed to complement the findings of the FCA and adopts the principles of sustainable drainage with the primary objective of maintaining existing hydrological conditions and minimising changes to the current runoff regime. It also sets out the principles for managing surface water runoff generated by the Proposed Development in a sustainable manner, ensuring no increase in flood risk on-site or elsewhere, and maintaining existing hydrological conditions as far as practicable, including a suitable consideration for climate change and future rainfall projections.

7.1.2. From a water quality perspective, it has been assumed that storage of chemicals and hydrocarbons, along with oil filled transformers will be present within the Project Substation Compound. This will be confirmed prior to detailed drainage design.

7.1.3. As the Northern and Eastern Parcels do not directly include any permanent project infrastructure, they are not anticipated to require any additional drainage design and have not been considered further in this ODS.

7.1.4. As established within the FCA, the Site is located within an area of low flood risk, with some small watercourses within the Site. An unnamed watercourse is present beyond the southern Site; however, the Site is not currently understood to be artificially drained by this feature. A watercourse is also present to the north of the Site, and north of B4267 Lavernock Road, it appears that a potential ditch may flow into this from St Marys Well Bay Road adjacent to the western parcel.

7.1.5. The drainage statement has been developed to be submitted for a pre-SAB application to Vale of Glamorgan SAB to inform the future site drainage detail design and for a full SAB application process. At this stage, the objective is to establish the drainage design principles that will inform the detailed drainage design, rather than define final drainage infrastructure. The detailed drainage design will be developed following the pre-SAB consultation response, completion of infiltration testing, groundwater investigations and, if required, any further detailed site surveys. This ODS will also be submitted as part of the forthcoming planning application for the Proposed Development.

7.1.6. The overarching drainage philosophy is to preserve the existing drainage characteristics of the Site wherever practicable, whilst ensuring that runoff generated from ancillary infrastructure is managed in accordance with the SuDS hierarchy and statutory requirements.

7.1.7. The need for sustainable surface water management is set out in TAN15, Statutory Standards for SuDS[1], and Welsh Government Sustainable Drainage Statutory guidance (2019)[26].

7.1.8. As defined by Statutory Standards for SuDS, there are two types of Standards. Standard S1 is a Hierarchy Standard while S2 to S6 are Fixed Standards. The Hierarchy Standard provides criteria for prioritising the choice of runoff destination. The Fixed Standards provide design standards which state the minimum design criteria that all SuDS should satisfy and standards which state how SuDS should be built, maintained and operated.

7.1.9. The ODS is provided as part of a local validation requirement and demonstrate how the Standards will be met in the design of the Proposed Development.

7.1.10. Each aspect of the Site has been considered separately as discussed below.

7.2. S1- Drainage Hierarchy (Surface water runoff destination)

7.2.1. Statutory Standards for SuDS considers the following drainage hierarchy/priority level approach that should be used in drainage strategies.

- Priority Level 1: Surface water runoff is collected for use;
- Priority Level 2: Surface water runoff is infiltrated to ground;
- Priority Level 3: Surface water runoff is discharged to a surface water body;
- Priority Level 4: Surface water runoff is discharged to a surface water sewer, highway drain, or another drainage system; and
- Priority Level 5: Surface water runoff is discharged to a combined sewer.

Rainwater Harvesting

7.2.2. Due to the nature of the Proposed Development, widescale water reuse is not anticipated to be appropriate as a large-scale discharge option.

7.2.3. The potential for reuse of surface water runoff from the roof of the proposed buildings will be reviewed as part of the detail design of the Proposed Development.

Infiltration into the Ground

7.2.4. Based on available geological information, as discussed in **Section 2.4**, no superficial deposits are mapped, and the bedrock geology consist of a mixture of geologies. The absence of extensive superficial deposits suggests that bedrock is likely to occur relatively close to the ground surface across much of the Site. Whilst mudstone formations are generally associated with lower permeability, the presence of limestone units and weathered bedrock horizons may provide localised opportunities for infiltration.

7.2.5. LandIS Soilscapes mapping indicates that the Site is underlain by a mixture of soil types. The main two soil types, recorded beneath the solar PV module locations are *"freely draining slightly acid but base-rich soils"* across the Western Parcel, and *"slowly permeable seasonally wet loamy and clayey soils"* across the east of the Site. Both soil types indicate infiltration may naturally be occurring.

7.2.6. The generally low mapped surface water flood risk across the Site, combined with the absence of known groundwater constraints and evidence of significant artificial drainage systems, suggest that infiltration may possibly represent a viable drainage solution. Potential infiltration features have also been identified in the area, with a potential basin visible to the north, supporting the interpretation that the local ground conditions may be free-draining and suitable for infiltration.

7.2.7. Consequently, the underlying geology does not present any obvious constraint to the use of infiltration-based drainage measures at this stage. However, infiltration characteristics are likely to vary across the Site in response to local geological conditions. It is also noted that the Project Substation Compound is located above a Secondary B aquifer with high groundwater vulnerability. This has been considered in the water quality assessment for discharges into the ground, as any proposed infiltration features will be located within close proximity to the Compound.

7.2.8. Site-specific infiltration testing and groundwater monitoring will be undertaken during the detailed drainage design stage to confirm drainage characteristics, establish groundwater levels and inform the proposed infiltration-based SuDS in support of the future SAB application.

7.2.9. The use of infiltration for surface water management has been considered for each component of the Proposed Development.

Solar Photovoltaic Arrays

7.2.10. The solar PV arrays represent the largest component of the Proposed Development, situated across three parcels. The exact number of modules is not confirmed but based on the current design there will be approximately 50,000-55,000 modules. These are anticipated to have an area of around 3 m^2 each, giving a total panel area of approximately 16.5 ha (165,000 m^2). Unlike conventional built development, solar panel installations do not create a continuous impermeable surface and therefore do not generate runoff in the same manner as more traditional forms of development.

7.2.11. Once attached to the mounting structure, the minimum height of the lowest part of the solar PV modules will be approximately 800 mm above existing ground level and the underlying grassland will be retained beneath and between the arrays throughout the operational lifetime of the Proposed Development. Rainfall intercepted by the panels will therefore be redistributed to the underlying ground surface via drip lines rather than being removed from the site hydrological system. As a result, existing infiltration processes remain available, and rainfall is likely to continue to infiltrate into the ground in a manner comparable to the existing baseline condition.

7.2.12. Research undertaken by Cook and McCuen (2013)[34] concluded that solar farm developments do not significantly increase runoff rates or runoff volumes when compared to existing greenfield conditions. Whilst local runoff distribution may change beneath individual panel rows, the overall hydrological response of the Site is anticipated to remain broadly equivalent to baseline conditions where vegetated ground cover is retained, and significant impermeable surfacing is not introduced. The findings of this research are considered directly applicable to the Proposed Development.

7.2.13. The Proposed Development has an anticipated lifespan of 40 years before either decommissioning or reapplication. The land is anticipated to have matured into a grassland habitat after the expiry of the planning consent, and therefore SuDS that would require significant new intrusive or otherwise unnatural elements (e.g. pipework or tanks), or large areas of land shaping (e.g. swales), should only be implemented as a last resort, as these would potentially have longer lasting impacts. By avoiding the use of intrusive or unnatural elements, this would be to enable easy restoration to the existing agricultural use with minimal ground disturbance or disruption to the new and improved ecological features.

7.2.14. The land beneath the solar arrays is currently considered greenfield and therefore naturally permeable. Grassland will be allowed to develop once the development is

[34]Cook, L.M. and McCuen, R.H. (2013) 'Hydrologic Response of Solar Farms', Journal of Hydrologic Engineering, 18(5), pp. 536–541. Available at: https://ascelibrary.org/doi/abs/10.1061/%28ASCE%29HE.1943-5584.0000530

operational, and both states are therefore anticipated to continue to allow infiltration and evapotranspiration processes to continue. Consequently, the solar array areas are not anticipated to materially alter runoff rates or runoff volumes across the Site. Dedicated attenuation infrastructure associated solely with the solar arrays is therefore not currently anticipated to be required, although this assumption will be confirmed during the pre-SAB process consultation.

7.2.15. One other known concern is the risk of water "sheeting" off solar arrays. Once the Proposed Development is constructed, some rainfall will be intercepted by the surface of the arrays before reaching ground level. Intercepted rainfall will either run down the face of the panels and drip onto the ground below, or it will be lost due to evaporation from the face of the panels. Without mitigation, there is a risk of erosion of the ground on which rainwater drips. This could then result in the formation of rivulets which could increase the speed at which runoff discharges from the Site. However, the potential for erosion to occur can be appropriately mitigated by features of the solar arrays themselves. Typical solar array can have gaps between each panel on an array which allows surface water to fall off in many locations on to fully vegetated ground beneath, helping to mitigate the 'drip effect'. The solar panels are known to be proposed to be placed on a fixed array angled at a slope of 10 to 30 degrees. This angle means water is unlikely to run down with enough velocity to "jump" the gaps. Rather, water would run down at a reduced speed and drip through the gaps.

7.2.16. The solar PV arrays will be supported by steel poles driven into the ground. These may also have the possibility to increase hardstanding area. Considering this, traditional fixed solar arrays have surface area ground impact in the range of 0.0012 m^2 - 0.0014 m^2. The Proposed Development would include approximately 50,000-55,000 solar panels across the entire Site. Each pole can generally support around 5 panels. Using this as an assumption, around 10,000 poles would be required across the Site. At an area of 0.0014 m^2 per pole, this would create a total area of approximately 14 m^2 across this Site. This increase can therefore be assumed to be negligible, and natural infiltration can be assumed to be continue unhindered as discussed above.

7.2.17. Infiltration to ground is assumed to be the primary method of surface water disposal within the solar PV panel parcels, subject to confirmation through site-specific infiltration testing and assessment of ground conditions. At this stage, limited information is available regarding the presence, condition or alignment of existing underground field drainage across the Site, which may be affected by the piling. Where required, filter trenches may be incorporated across localised runoff pathways within the gaps between PV panel modules to enhance infiltration and manage residual flows. Where infiltration is found to be unfeasible or insufficient, these features would help to slow the flow, facilitating filtration and treatment through the granular filter medium.

Access Tracks

7.2.18. The Proposed Development includes approximately 2.4 km (approximately 2.8ha) of internal access tracks, across all parcels. The access tracks will typically be constructed or upgraded using permeable materials such as gravel and will have a typical width of approximately 4 m, with a maximum width of up to 6 m required for two-way tracks and bends.

7.2.19. The permeable nature of the track construction will allow rainfall to continue to filter through the track surface and sub-base, whilst also allowing shallow overland flows to pass through and across the track network where required. Consequently, the access tracks are not expected to function as conventional impermeable highway surfaces, their frequency of use is very low, and they are not anticipated to generate significant additional runoff volumes.

7.2.20. The detailed design of the track network will seek to maintain existing drainage pathways and avoid interruption of natural drainage processes. Any localised drainage measures required to protect track integrity will be developed during detailed drainage design and incorporated where necessary to maintain pre-development drainage characteristics.

7.2.21. As a conservative approach, cut-off ditches may be required alongside proposed access tracks in locations where the tracks may intercept shallow overland runoff. These would help maintain existing flow pathways, reduce the potential for water to flow downslope towards the tracks and support track stability. The requirement, alignment and surface water management arrangements for any cut-off ditches should be confirmed during detailed drainage design, taking account of existing topography, field drainage, mapped flow routes and proposed track levels.

Project Substation Compound

7.2.22. The Project Substation Compound represents the principal impermeable component of the Proposed Development. This will be located along the eastern boundary of the Western Parcel, in the centre of the Site. The overall size of this compound is anticipated to be 60 m x 54 m and therefore comprise an approximate footprint of 0.324ha. Whilst relatively small in comparison to the overall development area, these features have the greatest potential to generate concentrated runoff and therefore require specific consideration for surface water management.

7.2.23. The compound area is expected to be surfaced with gravel, but where required, an impermeable liner may need to be introduced as prevention measure associated with fire water management. This requirement will be confirmed at detailed drainage design stage. As a conservative approach the compound area has been considered as fully impermeable for the storage volume calculations as part of this ODS.

7.2.24. As stated above, based on the findings of the FCA and the low level of mapped surface water flood risk across the Site, it is considered possible that natural infiltration currently occurs across parts of the Site.

7.2.25. Based on the drainage hierarchy, infiltration will be prioritised and henceforth be referred to as **'Option 1'** and is noted to be the preferred option pending the results of ground investigations. Should infiltration rates and groundwater conditions be unfavourable, **'Option 2'**, to discharge to a watercourse has also been considered as an alternative option.

Project Substation Compound Option 1 – Infiltration to the Ground

7.2.26. The current conceptual design and therefore preferred **Option 1** proposes a filter drain network across the compound which would collect and convey runoff to a proposed infiltration basin located immediately north of the Project Substation Compound, as shown in **Figure 5.1 (Volume III of the ES)**. This approach accords with the SuDS hierarchy by promoting infiltration at source and minimising the need to convey runoff away from the Site.

7.2.27. The infiltration basin would provide temporary storage during larger rainfall events whilst allowing runoff to infiltrate into the underlying ground. Pollution control measures are considered upstream of the infiltration basin to prevent pollution of the local aquifers. Pollution control measures are discussed in **Sections 7.4** of this report.

7.2.28. Site-specific infiltration testing and groundwater monitoring should be undertaken during detailed drainage design stage to confirm infiltration rate of the underlying geology, groundwater levels and the suitability of infiltration-based drainage measures. It is recommended that specific infiltration testing occurs across the Site to consider the overall site rate and suitability, but also at the specific location and depth of the proposed basin.

Project Substation Compound Option 2 - Discharge into a Surface Water Body

7.2.29. Existing land use comprises predominantly of permeable arable land and there is no evidence that the Site currently relies upon an artificial drainage network to manage runoff.

7.2.30. The known surface water flow path to the north, as identified in **Section 5.3** of the surface water flood risk, may be part of a drainage ditch system adjacent to the disused railway line, however, surveys to confirm its existence, size, level and suitability will be required. Site knowledge and mapping also indicate a drainage ditch along St Mary's Well Bay Road to the west of the Project Substation Compound which may be a suitable discharge point. This will also require survey for confirmation of existence, condition and onwards connection to the wider water network. It is considered possible that at

least one form of informal drainage ditch system is present to convey the noted surface water flooding and pooling away from the Site, if infiltration is not suitable.

7.2.31. For **Option 2**, a detention basin is proposed to drain and store surface water runoff water from the Project Substation Compound and then discharged at a controlled greenfield runoff rate into the appropriate identified watercourse to the north by gravity. This will require a new outfall to the receiving open watercourse.

7.2.32. Whilst an 'unnamed watercourse' is located beyond the southern Site, the Project Substation Compound is topographically separated from this unnamed watercourse, with a depression through the centre of the Site as identified in **Figure A.2** (**Annex A**). A connection to the 'unnamed watercourse' may still be possible using a below ground pipework and/or pumping, but due to the difference in ground levels, routing runoff to this feature would require unnecessary mechanical intervention within the existing hydrological regime and would represent a lower priority option within the drainage hierarchy.

7.2.33. If a gravity connection to any potential ditch to the north or west is not possible, or no suitable ditch is confirmed to be present, a pumped drainage option to either the unnamed watercourse or the sea should be investigated. However, this has been considered to be highly unlikely and therefore has not been considered further.

7.3. S2- Surface Water Runoff Hydraulic Control

Solar PV Arrays and Access Track

7.3.1. As noted in **Section 7.2**, the solar PV arrays are not anticipated to materially alter runoff rates or runoff volumes when compared with the existing greenfield condition. The panels will not create continuous impermeable surfaces, and so underlying ground will not be paved or become hardstanding. As outlined earlier in this report, research by Cook and McCuen (2013)[37] demonstrates that solar developments generally maintain runoff characteristics comparable to existing conditions and this principle is considered applicable to the Proposed Development.

7.3.2. The access tracks will be constructed using permeable materials and are expected to continue to permit infiltration through the track structure. Existing flow pathways will be maintained and no significant increase in runoff generation is anticipated.

Project Substation Compound

7.3.3. The Project Substation Compound represents the primary area of concentrated runoff generation. Runoff from this area will either be intercepted by filter drains and conveyed to an infiltration basin in the case of **Option 1**, providing storage and focussed infiltration. Should Option 2 be suitable, water will again be conveyed and stored within

a detention basin, before being released at a controlled rate into the receiving watercourse.

7.3.4. Detailed sizing of these features for either Option will be undertaken at the detailed drainage design stage to ensure post-development runoff rates do not exceed the existing baseline condition. However, at this stage approximate calculations have been carried out as presented further below.

7.3.5. Greenfield runoff rates have been calculated for the Site, as shown in **Table 7.1**, using the FEH 2025 statistical method and FEH22 data. This has been done solely for the Project Substation Compound area (0.324ha) It is assumed that due to the utilisation of infiltration, all post development run off rates will be negligible and no different to existing runoff rates. Full calculations are shown in **Annex C**.

Table 7.1 - Greenfield runoff rates

Year Event	Flow (l/s)
1 in 1 year	2.9
1 in 2 year	3
QBAR (1 in 2.3 year)	3.2
1 in 10 year	4.6
1 in 30 year	5.8
1 in 100 year	7.1
1 in 200 year	8

Option 1

7.3.6. In the absence of the testing and confirmation of the infiltration rate, a conservative approach has been taken to assume infiltration rate as 1×10^{-6} m/s. This rate corresponds to the infiltration rate of a poor infiltration media – silty, clay, loam soil, as taken from Table 25.1 of CIRIA SuDS Manual, which is likely a worst acceptable rate for infiltration and corresponds with the known geology information. Using this indicative infiltration value and the conservative impermeable area of the Project Substation Compound, storage estimations were undertaken in Causeway Flow (shown in **Annex D**) using Flood Estimation Handbook (FEH) rainfall data, for the 1 in 100-year event plus 40% climate change using a dummy network and basin with a hardstanding area of 0.342ha.

7.3.7. The modelling conservatively indicates a storage requirement of around 450 m^3, with associated land take of approximately 850 m^2. This assumes that the basin would use 1 in 3 side slopes a 300 mm freeboard, and a 1 m of basin depth as an initial estimation. These parameters may be refined during detailed drainage design, subject to the final Proposed Development layout and other site constraints. For example, it is noted within

the SuDS Manual that no freeboard may be required for smaller basins where there is a lower risk to people and properties. Ecological benefits from the use of a basin have also been considered and incorporated into the final design. This is discussed in **Section 7.5.**

7.3.8. At present, the infiltration basin is proposed to be located to the north of the Project Substation Compound, outside of the known mapped surface water flood risk. Sizing has been based on the known values above.

7.3.9. The volume estimated can be considered as a worst-case scenario. Additional storage provision is also expected within the piped network, filter drainage network, and gravel sub-base layer across the Project Substation Compound. Final details of required storage will therefore be established at detailed drainage design.

Option 2

7.3.10. Should infiltration be deemed unviable, discharging to a watercourse should be investigated, as above. Surface water should be discharged at a controlled rate such that the discharge is restricted to a greenfield Qbar rate, in line with Welsh Standards for SuDS.

7.3.11. Using the Causeway Flow, also shown in **Annex D**, assuming a discharge rate of 4.2l/s from **Table 7.1**, a storage volume of 283 m^3 would be required. Again, assuming 1 in 3 side slopes, 300 mm freeboard, and 1 m of water depth this would require a land take of approximately 530 m^2, which is less than indicated for the infiltration basin. Water would then be discharged via gravity to a suitable nearby watercourse. These values would be confirmed at detailed drainage design and following confirmation of the characteristics of the receiving watercourse.

7.3.12. An indicative drainage layout showing the filter drain network and potential location of infiltration/detention basin is shown in **Annex E**.

7.3.13. The BRE365 infiltration tests results may also indicate the suitability of a hybrid option of partial infiltration using an unlined detention basin to allow some infiltration before a controlled discharge to the nearby watercourse.

7.4. S3 - Water Quality

7.4.1. The SuDS Manual sets out a common approach to managing the quality of surface water runoff. It describes risks posed by surface water runoff to the receiving environment as a function of:

- The pollution hazard at a particular site (the pollution source);
- The effectiveness of SuDS treatment components in reducing levels of pollutants to environmentally acceptable levels (the pollutant pathway); and

- The sensitivity of the receiving environment (the environment receptor).

7.4.2. The Simple Index Approach assesses SuDS components to determine whether selected arrangements of SuDS components and corresponding treatment trains provide a total pollution mitigation index at least equal to, or greater than, the pollution hazard index.

Solar PV Arrays and Access Tracks

7.4.3. The solar PV arrays will not introduce significant sources of contamination and the introduction of grassland habitats will promote infiltration and treatment of rainfall as it drains through the soil profile.

7.4.4. The access tracks will be formed from permeable gravel surfaces which inherently provide a degree of filtration and sediment retention. Construction and maintenance activities will be undertaken to minimise erosion and sediment transport throughout the operational lifetime of the development. Where required, grassed cut-off ditches will provide additional pre-treatment benefits.

7.4.5. Based on this, no pollution has been identified from the solar PV Arrays and Access Tracks and therefore no treatment is proposed.

Project Substation Compound

7.4.6. The Project Substation Compound represents the primary potential water quality risk on the Site due to transformers and diesel generator presence, and therefore incorporates a treatment-train approach, which is outlined further in this section.

7.4.7. Table 26.2 of the SuDS Manual assigns pollution hazard indices for different land use classification, which is presented in **Table 7.2**.

Table 7.2 – Table 26.2 of the SuDS manual C753

TABLE 26.2 Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways[1]	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways[1]	High	0.8[2]	0.8[2]	0.9[2]

7.4.8. The Project Substation Compound is considered an 'industrial site' with **High** pollution hazard. As a worst-case scenario, it has been assumed to comprise of oil filled transformers and diesel generator, where potential leaks to the water environment are possible. In general, these elements are designed and operated to meet stringent environmental standards relating to the detection and containment of oil and hydrocarbon spillages at source. These include housing the transformers in bunds with automatic penstock and shut off valves when there are oil/hydrocarbon spillages. These transformers are fitted to downstream oil interceptors which further help improve the surface water runoff quality. Depending on the type of diesel generator used on the Site, these will be either self-contained structures or will be provided with a containment element, similar to the transformers.

7.4.9. In addition to regular inspections and maintenance, sensors help to monitor and detect issues with these units and raise alarms for operator attendance where needed. As part of additional pollution control, it is assumed that a downstream defender unit will be installed prior to infiltration basin, to suit the assessed risk from the Proposed Development as required; this will be confirmed at detailed drainage design.

7.4.10. Other aspects of the Proposed Development, such as the internal access tracks, will likely have much lower pollution indices, but will still require treatment. With very low

traffic movements and no other chemical storage, the internal access tracks are more likely to reflect the pollution indices associated with 'Low Traffic Roads'. The BESS also comprises only battery storage containers located on impermeable hardstanding. Under normal operating conditions, the area is not expected to generate significant pollutant loading, with access limited to infrequent maintenance and inspection activities. Accordingly, the pollution hazard associated with routine runoff from the BESS is considered to be "Low", with pollution indices comparable to those for "Other Roofs" considered appropriate under normal operating conditions. The Project Substation Compound will include fire detection and fire water management measures to prevent pollution of the aquifer and/or open watercourse. Fire water management is outside of the scope of this report and is considered within the Outline Battery Fire Safety Management Plan (oBFSMP) (**Appendix 5D: oBFSMP** of the ES). Appropriate and relevant aspects from the Outline Battery Fire Safety Management Plan will be incorporated into the final detailed drainage design.

7.4.11. In light of this, all surface water runoff will also pass through lined filter drains before entering the proposed infiltration basin, providing opportunities for sediment removal and pretreatment prior to infiltration for all surface water within the Project Substation Compound. This will ensure untreated water will not immediately infiltrate into the ground. Provision of the additional downstream defender unit will ensure the quality of the runoff prior to directing it into the infiltration basin. Any additional pollution prevention measures required will be determined at detailed drainage design stage and incorporated as part of the future SAB application.

7.4.12. As per NRW advice, so long as water discharged to the ground is clean surface run-off, no environmental permit is required. Therefore, sufficient treatment will be required to allow this.

7.4.13. Table 26.3 and 26.4 of SuDS Manual C753 gives the mitigation indices that refer to performance in pollutant removal by different treatment options/SuDS features when conveying and then discharging to groundwater (Table 26.4). This is shown in **Table 7.3**.

Table 7.3 – Table 26.3 (above) and 26.4 (below) of the SuDS manual, showing mitigation indices of elements for conveyance and discharge to surface water and groundwater

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters

	Mitigation indices[1]		
Type of SuDS component	**TSS**	**Metals**	**Hydrocarbons**
Filter strip	0.4	0.4	0.5
Filter drain	0.4[2]	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond[4]	0.7[3]	0.7	0.5
Wetland	0.8[3]	0.8	0.8
Proprietary treatment systems[5,6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

TABLE 26.4 Indicative SuDS mitigation indices for discharges to groundwater

Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates[1]	**TSS**	**Metals**	**Hydrocarbons**
A layer of dense vegetation underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.6[4]	0.5	0.6
A soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.4[4]	0.3	0.3
Infiltration trench (where a suitable depth of filtration material is included that provides treatment, ie graded gravel with sufficient smaller particles but not single size coarse aggregate such as 20 mm gravel) underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.4[4]	0.4	0.4
Constructed permeable pavement (where a suitable filtration layer is included that provides treatment, and including a geotextile at the base separating the foundation from the subgrade) underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.7	0.6	0.7
Bioretention underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.8[4]	0.8	0.8
Proprietary treatment systems[5, 6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area.		

7.4.14. Those relevant to Project Substation Compound and their impacts are outlined in **Table 7.4a** and **7.4b**. The mitigation indices from Table 26.3 of the SuDS Manual are halved for any interventions after the primary SuDS element, as required by the SuDS Manual.

Table 7.4a - Pollution control performance for Project Compound, option 1

Description		Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Land use pollution hazard index for High-Risk areas of project compound	Industrial site	**High**	**0.8**	**0.8**	**0.9**
	Filter Drain		0.4	0.4	0.4
Secondary component *0.5	Oil containment and interceptors (as required) *		0.4*	0.4*	0.4*
Tertiary component *0.5	Downstream Defender **		0.25	0.2	0.25
Sufficient mitigation?			Sufficient	Sufficient	Sufficient

Table 7.4b – Pollution control performance for Project Compound, option 2

Description		Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Land use pollution hazard index for Low-Risk areas of project compound	Low Traffic Roads/Other Roofs	**Low**	**0.5**	**0.4**	**0.4**
	Filter Drain		0.4	0.4	0.4
Secondary component *0.5	Downstream Defender **		0.25	0.2	0.25
Sufficient mitigation?		-	Sufficient	Sufficient	Sufficient

**Assumed ACO QuadraCeptor proprietary treatment unit or other oil interceptors with similar mitigation indices/specifications*
***Assumed Hydro Vortex Plus Downstream Defender proprietary treatment unit or other with similar mitigation indices/specifications*

7.5. S4 and S5 – Amenity and Biodiversity

7.5.1. A key aim for sustainable drainage is to provide an improved local environment which integrates the surface water drainage function with open space, providing amenity and recreation opportunities where possible. Amenity and biodiversity can often be considered together to address these aspects.

7.5.2. The Proposed Development is a private, high security operational energy facility and therefore opportunities to provide public amenity through the drainage system are inherently limited. However, the ODS has been developed to minimise the requirement for extensive engineered drainage infrastructure and therefore maintain the existing rural character of the Site.

7.5.3. By retaining the existing strata beneath and around the solar arrays, without large scale increase in impermeable area, and promoting natural infiltration processes, the drainage systems proposed avoid unnecessary visual impacts associated with conventional drainage infrastructure and enables the existing landscape character to be largely maintained throughout the operational life of the development. As previously noted, it should also be considered that the eastern parcel has been reserved for ecological mitigation and will provide further amenity and biodiversity benefits to the project.

7.5.4. The final design of the selected basin would incorporate the measures considered within the Outline Landscape and Ecology Management Plan (oLEMP), including the creation of marginal wet habitats, providing further ecological benefits.

7.5.5. The ODS seeks to maintain natural hydrological processes and minimise disturbance to existing habitats wherever practicable. Grassland habitats will be created beneath and around the solar arrays, providing opportunities for ecological enhancement and habitat connectivity across the Site.

7.5.6. The infiltration-led drainage approach avoids unnecessary modification of existing drainage pathways and reduces the requirement for extensive engineered drainage infrastructure.

7.5.7. Overall, the proposed ODS is considered compatible with the amenity and biodiversity objectives of the Proposed Development and will support the retention of existing ecological functions across the Site.

7.6. Exceedance and Overland Flow

7.6.1. The drainage system will be designed to accommodate rainfall events up to the 1 in 100-year event plus climate change.

7.6.2. In the event of larger rainfall events, water is anticipated to be conveyed by gravity across the existing fields mimicking the existing site runoff characteristics. This approach will aid in managing flood flows, whilst at the same time ensuring that the vegetated ground cover and boundary vegetation receive suitable hydration.

7.6.3. Vegetated ground will be provided underneath and around arrays in the form of grassland habitats. Research from Cook and McCuen (2013) advises where this is incorporated and bare earth is avoided, a solar farm will have little impact on runoff characteristics.

7.6.4. Solar farm components are not vulnerable in the event of exceedance, and the Project Substation Compound is located away from mapped surface water flow paths. Exceedance flows are expected to follow existing flow paths into the stormwater attenuation features and not impact elsewhere.

7.7. Standard 6 – Design of drainage for construction, operation and maintenance

7.7.1. The ODS presented within this report is conceptual in nature and has been developed to establish the drainage principles that will inform the subsequent SAB process.

7.7.2. Detailed drainage design will be undertaken following completion of infiltration testing, groundwater investigations and detailed topographic surveys.

7.7.3. The detailed design process will confirm:

- Infiltration rates across the Site;
- Seasonal groundwater levels;
- Final sizing of infiltration basins, filter drains and drainage network;
- Exceedance flow routing; and
- Long-term maintenance requirements.

7.7.4. The proposed approach intentionally retains flexibility to allow the final drainage design to respond to site-specific conditions identified through further investigation whilst remaining consistent with the principles established within this strategy.

Construction

7.7.5. The proposed surface water drainage system will be designed and constructed in accordance with the appropriate design standards, such as Building Regulations Approved Document H and the SuDS Manual C753.

7.7.6. Consideration of surface water drainage during construction works are set out within the CEMP (**Appendix 5A: oCEMP**) and are not considered further in this report.

7.7.7. Details of surface water drainage design including hydraulic calculations and construction details will be provided at detailed design to support the full SAB approval, incorporating and considering relevant comments provided through the pre-SAB application.

7.7.8. Where practicable, permanent drainage infrastructure will be installed early in the construction programme to reduce disturbance and minimise reworking.

Operation and Maintenance

General Requirements

7.7.9. Regular inspection and maintenance are required to ensure the effective long-term operation of SuDS and the drainage network, including filter drains, pipework, chambers and associated flow control components. These requirements are detailed in the SuDS Manual C753.

7.7.10. The surface water drainage network and maintenance of SuDS features will be confirmed at the full SAB stage.

7.7.11. Maintenance activities will be made available in a site-specific Operation and Maintenance (O&M) Manual to ensure adequate maintenance is provided during its lifetime. Access provision for maintenance will be made available at all times to the appointed contractor.

General Maintenance of Drainage Network Elements

Pipes and Pipework

- Routine inspection to identify blockages, siltation, root ingress, structural defects or misconnections;
- Cleaning of pipework using water jetting or vacuum techniques where silt or debris accumulation is observed;
- Removal of obstructions to maintain hydraulic capacity and prevent surcharging;
- Repair or replacement of damaged pipe sections where defects are identified; and
- Verification that gradients, joints and connections remain intact and operational.

Manholes and Inspection Chambers

- Visual inspection from ground level to check for debris, sediment build-up, standing water or signs of surcharge;
- Inspection of covers, frames and locking mechanisms to ensure safe and secure access;
- Cleaning of chambers where sediment accumulation is identified, by competent contractors;
- Monitoring for structural damage, infiltration or leakage; and

- Confined space entry will be avoided unless undertaken by suitably qualified personnel.

Catch Pits/Catchpits/Silt Traps

- Regular inspection for accumulation of silt, debris, oils or floating material;
- Emptying and cleaning using vacuumation or jetting to maintain sediment storage capacity;
- Reinstatement of silt buckets or sumps following cleaning;
- Increased inspection frequency following heavy rainfall events; and
- Safe disposal of removed material in accordance with waste regulations.

Gullies, Channels and Surface Drainage Features

- Removal of debris, litter and leaf fall from inlets and gratings;
- Flushing or jetting of gullies and channels to prevent blockage;
- Inspection of gratings, joints and concrete surrounds for damage or misalignment;
- Repair or replacement of damaged components as required; and
- Monitoring for evidence of ponding or reduced conveyance.

Flow Control Devices and Attenuation Controls

- Routine inspection to ensure devices are free from silt, debris and obstructions;
- Cleaning of flow control units to maintain design discharge rates;
- Inspection of chambers housing flow controls for sediment accumulation; and
- Repair or replacement of damaged or malfunctioning components.

General Maintenance of SuDS Elements

Maintenance Requirements for Proprietary Treatment Systems

7.7.12. The general maintenance obligations associated with the proposed proprietary treatment systems (e.g. oil separators, downstream defenders, penstock valves and flow controls) are included in Table 14.2 of the SuDS Manual. They will include the following activities:

- Routine inspection of inlets, outlets, chambers and internal components for blockages, sediment accumulation, oil build-up, damage or reduced performance;
- Removal of litter, debris, silt, oil, grease and other retained materials;
- Replacement or cleaning of filter media where provided;
- Confirmation that moving parts, shut-off devices, valves and flow controls remain operational;
- Regular testing of alarm systems, automatic shut-off devices or penstocks, where fitted, with prompt rectification of any defects;

- Removal and disposal of maintenance wastes by an appropriately licensed contractor; and
- Maintenance in accordance with the manufacturer's recommendations.

7.7.13. The general maintenance obligations associated with Filter Drains are included in Table 16.1 of the SuDS Manual. They include regular inspections for the removal of litter/debris from the drain surface, access chamber and pre-treatment devices. Inspection/removal of surface, inlets/outlets, control systems, pre-treatment devices for blockages/siltation.

7.7.14. Should **Option 1** be selected, the infiltration basin will require regular inspection and maintenance. This is important for the effective operation of infiltration basins as designed. Maintenance responsibility for an infiltration basin and its surrounding area should be placed with a responsible organisation. The general maintenance obligations associated with infiltration basins are included in Table 13.2 of the SuDS Manual. They include regular activities, such as removal of litter/debris grass cutting, inspection of vegetation, inspection of inlets, outlets for silt sedimentation. Monitoring of inlets, outlets or blockages should be carried out and cleared as required. Infiltration surfaces should also be monitored for compaction and pooling.

7.7.15. Should **Option 2** be selected, a detention basin will be in place and will also require regular inspection and maintenance. The general maintenance obligations associated with Detention Basins are included in Table 22.1 of the SuDS Manual. They include regular activities, such as removal of litter/debris grass cutting, inspection of vegetation, inspection of inlets, outlets for silt sedimentation, as well as managing wetland plants in the outlet pool, occasional maintenance including sediment removal, trees pruning and reseeding and remedial activities such as, damage repair, reseeding, re-turfing, realignment of rip-rap.

7.7.16. In addition to the general maintenance requirements set out in the SuDS Manual, all proposed SuDS components will be inspected and maintained in accordance with the relevant manufacturer's recommendations, where applicable.

7.7.17. As discussed above, the Proposed Development is anticipated to remain operational for up to 40 years. Such a duration represents a substantial period of time over which natural hydrological systems may adapt to local drainage conditions. The introduction of extensive engineered drainage infrastructure where it is not otherwise required has the potential to alter established drainage pathways and create reliance on artificial systems within the wider hydrological network. Following decommissioning, removal of these systems could subsequently alter drainage conditions both on-site and downstream. Consequently, the preferred drainage system is to maintain the existing hydrological regime wherever practicable and avoid unnecessary intervention within existing drainage processes.

8. Conclusions

8.1.1. WSP was commissioned by the Applicant to prepare a Flood Consequence Assessment and Outline Drainage Statement for the Proposed Development, located between Penarth and Sully in the Vale of Glamorgan.

8.1.2. The Proposed Development is considered to be a 'Less Vulnerable' development category under TAN15.

8.1.3. The Site is not located within mapped fluvial or coastal/tidal Flood Zone 2 or Flood Zone 3 extents.

8.1.4. The principal flood risk to the Proposed Development is associated with surface water and small watercourses. This risk is generally low across the Site, with localised areas of increased risk principally within the Western Parcel and associated with field boundaries, low-lying areas and overland flow routes.

8.1.5. No significant flood risk has been identified from fluvial, coastal/tidal, groundwater, sewerage/drainage infrastructure, reservoirs or canals based on the information available at the time of writing, subject to the recommendations set out in Section 6.

8.1.6. Subject to implementation of the recommended flood risk management measures, including appropriate surface water management, protection of existing drainage features and confirmation of the detailed drainage design, the Proposed Development is expected to remain safe throughout its anticipated 40-year operational lifetime without increasing flood risk elsewhere.

8.1.7. The ODS has demonstrated that the increase in surface water runoff due to the Proposed Development can be managed on site by mimicking the existing surface water drainage regime and in compliance with the SAB requirements.

8.1.8. The Site is currently assumed to naturally drain via infiltration, and therefore, to replicate pre-developed conditions, it is proposed that run-off from the solar panels will infiltrate directly into the ground and the access tracks will be permeable to allow surface water to discharge directly to the ground at the natural infiltration rate. Where required, cut-off ditches and filter drains will be provided to slow down the flow towards the access tracks and to lower lying parcels.

8.1.9. The preferred option (**Option 1**) to manage stormwater runoff from the Project Substation Compound will be via the use of an infiltration basin, where it will then infiltrate naturally into the ground. Pollution control measures will be incorporated into the drainage design, including containment around the transformer(s), an automatic shut-off system and an oil interceptor. A downstream defender unit is also proposed upstream of the infiltration basin to provide an additional level of treatment. Should infiltration prove unsuitable for the Project Substation Compound, an alternative surface water management solution will be implemented, such as a controlled discharge to a suitable local watercourse, subject to the necessary assessment and approvals.

8.2. TAN15 Acceptability Criteria

8.2.1. In accordance with the requirements of TAN15, this FCA and ODS has demonstrated that the Proposed Development meets the acceptability criteria set out in TAN15. These include the following:

- No increase in flooding elsewhere: there will be no loss of floodplain, no change in overland flowpaths and the ODS has demonstrated that there will be no increase in surface water runoff;
- Occupiers aware of flood risk: the Site users will be informed of the findings of the FCA as part of the Site operation and management plan;
- Escape/evacuation routes present: the access and egress routes to the Site are not affected by flooding. The Site operation and management plan will be informed by the findings of the FCA and this will be available to site users. The proposed access and egress routes are not affected by flooding;
- Flood emergency plans and procedures agreed and in place: the access and egress routes to the Site are not affected by flooding. The Site operation and management plan will be informed by the findings of the FCA and this will be available to site users. The proposed access and egress routes are not affected by flooding;
- Flood resistant and resilient design: The design of the Proposed Development has taken into account the local flood risk and sited the key components outside of the known surface water flowpaths; and
- Acceptable consequences for type of use: The Proposed Development is classed as “less vulnerable” and is suitable in the proposed location.

8.3. Recommendations

8.3.1. Existing drainage features, including field drains and overland flow routes, should be retained where practicable. Where crossings are required, suitable drainage measures

should maintain existing flow pathways and should be considered at the detailed drainage design stage.

8.3.2. For drainage Option 1, site-specific ground investigation, groundwater monitoring and infiltration testing should be undertaken to confirm whether infiltration is feasible and to inform detailed design of infiltration-based SuDS.

8.3.3. A topographical survey of the Site and confirmation of known watercourses is also advised to in particular, for Option 2, the ditch to the north of the Site will need to be surveyed to establish an onward connection to the receiving watercourse (Sully Brook).

8.3.4. Pollution control measures, as listed within this report should be included to ensure groundwaters are protected for the preferred drainage Option 1.

Annex A – Figures

N

Northern Parcel

Western Parcel

Central Parcel

Eastern Parcel

Upper Cosmeston

Lower Cosmeston Farm

Medieval Village

Dovecote

Ty-r-Orsaf

Dismantled Railway

Lavernock Farm

Roundbush F

Ranny Bay

Rowland's Well

Holiday Village

Holiday Centre

Wales Coast Path

Swanbridge

Swanbridge Farm

St Hilary

St Mary's Well Bay

Ball Rock

Ball Bay

Breakwaters

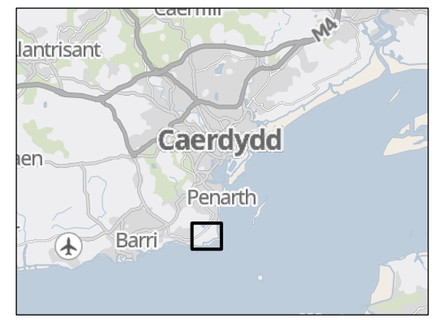
Lavernock Point

The Vineyard

0 500 m

Legend

Site Boundary



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Rev.	Date	Revision Description	Drawn	Check	Rev.	App.
0	29/10/2026	Initial Issue	AR	RJ	DP	SM

Scale @ A3 — Scale: 1:7,500 — DO NOT SCALE

Project: Fferm Solar Larnog

Drawing Title: Site Location Plan

Trydan Gwyrdd Cymru

Drawing No.: Figure 2C.A.1

Northern Parcel

Western Parcel

Central Parcel

Eastern Parcel

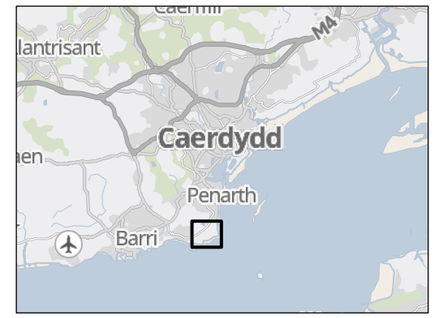
0 500 m

Legend

Site Boundary

1m DTM LiDAR

- < 0m
- 0m - 10m
- 10m - 20m
- 20m - 30m
- 30m - 40m
- 40m - 50m
- 50m - 61.5m



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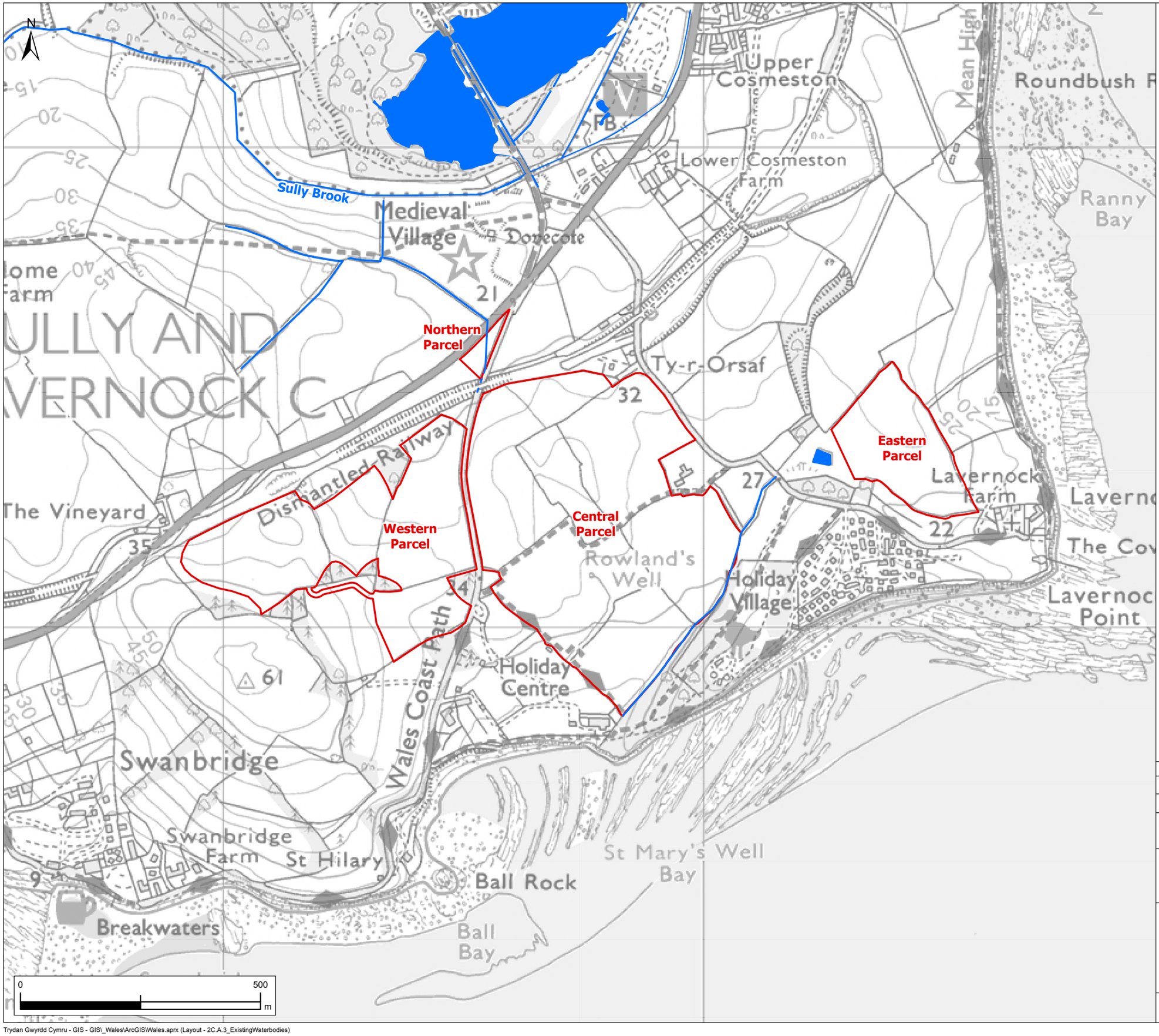
Rev.	Date	Revision Description	Drawn	Check	Rev.	App.
0	29/10/2026	Initial Issue	AR	RJ	DP	SM

Scale @ A3 — Scale: 1:7,500 — DO NOT SCALE

Project: Fferm Solar Larnog

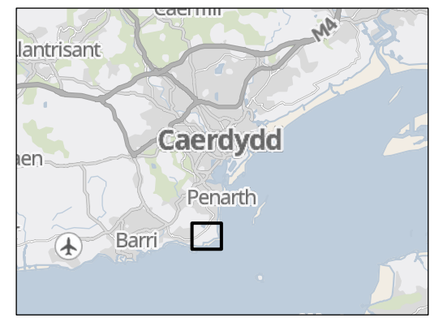
Drawing Title: 1m DTM LiDAR Map

Drawing No.: Figure 2C.A.2



Legend

- Site Boundary
- Existing Watercourse
- Assumed Watercourse
- Surface Waterbody



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Scale @ A3 — Scale: 1:7,500 — DO NOT SCALE

Project: Fferm Solar Larnog

Drawing Title: Location of Existing Waterbodies

Trydan Gwyrdd Cymru

Drawing No.: Figure 2C.A.3

N

Northern Parcel

Central Parcel

Western Parcel

Eastern Parcel

Upper Cosmeston

Lower Cosmeston Farm

Medieval Village

Dovecote

Ty-r-Orsaf

Dismantled Railway

Rowland's Well

Holiday Village

Holiday Centre

Wales Coast Path

Swanbridge

Swanbridge Farm

St Hilary

Ball Rock

St Mary's Well Bay

Ball Bay

Breakwaters

The Vineyard

Lavernock Farm

Lavernock Point

Roundbush

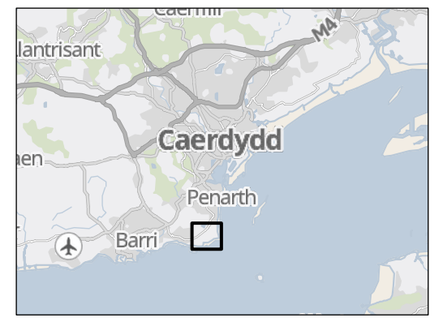
Ranny Bay

FB

0 500 m

Legend

- Site Boundary
- Combined Sewer
- Foul Sewer
- Watermain



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Rev.	Date	Revision Description	Drawn	Check	Rev.	App.
0	29/10/2026	Initial Issue	AR	RJ	DP	SM

Scale @ A3

Scale: 1:7,500 DO NOT SCALE

Project

Fferm Solar Larnog

Drawing Title

Location of Existing Water Utilities

Trydan Gwyrdd Cymru

Drawing No.

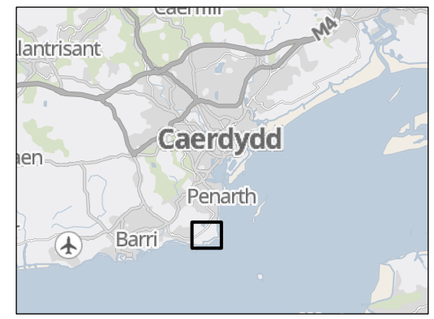
Figure 2C.A.4

Legend

- Site Boundary
- Main Rivers

Flood Zones from Surface Water & Small Watercourses

- Flood Zone 2
- Flood Zone 3



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Rev.	Date	Revision Description	Drawn	Check	Rev.	App.
0	29/10/2026	Initial Issue	AR	RJ	DP	SM

Scale @ A3 — Scale: 1:7,500 — DO NOT SCALE

Project: Fferm Solar Larnog

Drawing Title: Surface Water and Small Watercourse Flood Risk Map

Drawing No.: Figure 2C.A.5

N

Sully Brook

Northern Parcel

Western Parcel

Central Parcel

Eastern Parcel

Upper Cosmeston

Lower Cosmeston Farm

Medieval Village

Dovecote

Ty-r-Orsaf

Dismantled Railway

Lavernock Farm

Lavernock Point

Roundbush

Ranny Bay

Rowland's Well

Holiday Village

Holiday Centre

Wales Coast Path

Swanbridge

Swanbridge Farm

St Hilary

St Mary's Well Bay

Ball Rock

Ball Bay

Breakwaters

The Vineyard

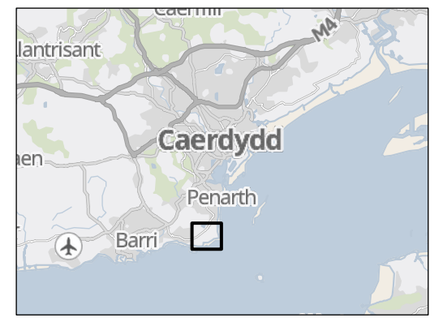
0 500 m

Legend

- Site Boundary
- Main Rivers

Flood Zones from Rivers

- Flood Zone 2
- Flood Zone 3



Source:
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Rev.	Date	Revision Description	Drawn	Check	Rev.	App.
0	29/10/2026	Initial Issue	AR	RJ	DP	SM

Scale @ A3

Scale: 1:7,500 DO NOT SCALE

Project

Fferm Solar Larnog

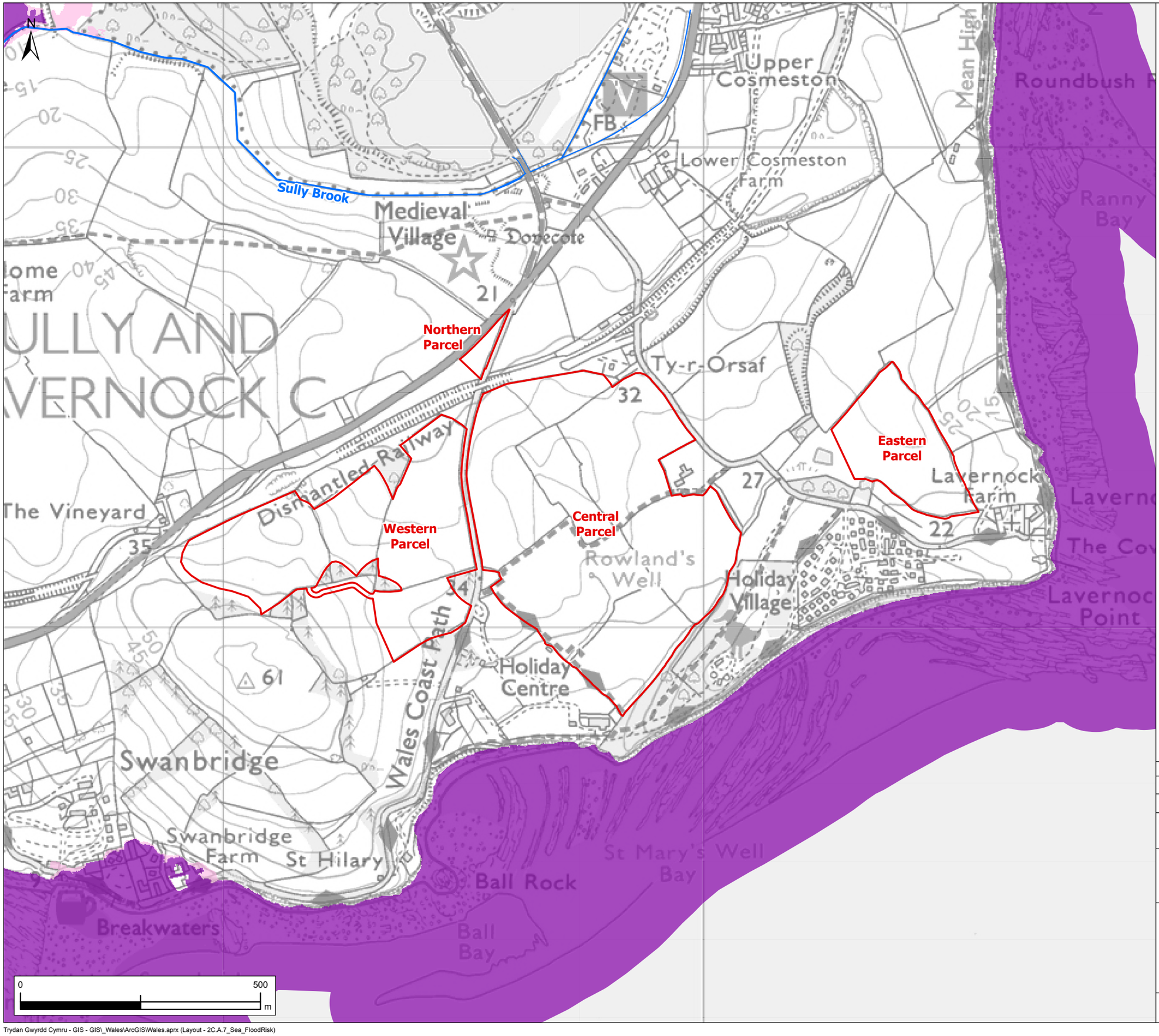
Drawing Title

Fluvial Flood Risk Map

Trydan Gwyrdd Cymru

Drawing No.

Figure 2C.A.6

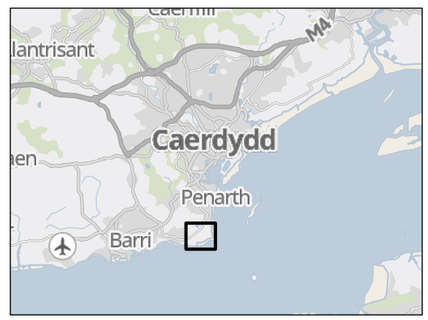


Legend

- Site Boundary
- Main Rivers

Flood Zones from the Sea

- Flood Zone 2
- Flood Zone 3



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Rev.	Date	Revision Description	Drawn	Check	Rev.	App.
0	29/10/2026	Initial Issue	AR	RJ	DP	SM

Scale @ A3 — Scale: 1:7,500 — DO NOT SCALE

Project: Fferm Solar Larnog

Drawing Title: Flood Risk from the Sea

Trydan Gwyrdd Cymru

Drawing No.: Figure 2C.A.7

Annex B – Utility Survey

Dŵr Cymru
Welsh Water

N
W E
S

LEGEND(Representative of most common features)

Waste network:

- Foul chamber
- Surface water chamber
- Combined chamber
- Combined sewer overflow
- Special purpose chamber
- Treatment works
- Non Dwr Cymru
- Pumping station
- Outfall
- Lamphole
- Storm Overflow
- Rising main
- Gravity sewer
- Private sewer
- Private sewer subject to Sect. 104 adoption agreement
- Private Sewer Transfer
- Lateral Drain
- Inspection Chamber

NB: Sewer symbol colour indicates the type.
RED - Combined
GREEN - Surface Water
BROWN - Foul
Purple - Former S24 sewers (for indicative purposes only)

Notes:

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as partof any risk assessment prior to excavation

Dwr Cymru Cyfyngedig ('the Company') gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon In the event of excavations or other works made in the vicinity of the company's apparatus and any onus of locating the apparatus before carrying out any excavations rests entirely on you. The information which is supplied hereby the company, is done so in accordance with statutory requirements of sections 198 and 199 f the water industry Act 1991 based upon the best Information available and in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclosure the existence of a drain sewer or disposal main laid before 1 September 1989, or if they do, the particulars thereof including their position underground may not be accurate. It must be understood that the furnishing of this information us entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and the company's right to be compensated for any damage to its apparatus.

EXACT LOCATIONS OF ALL APPARATUS TO BE DETERMINED ON SITE

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Map Ref:	318292.168612
Map Scale	1: 3,000
PrintedBy	Bridget Jones
PrintedOn	03/08/2026

Dŵr Cymru
Welsh Water

N
W E
S

LEGEND

Clean network:

- Sluice valve
- Pressure reducing valve
- Meter
- Bulk meter
- Hydrant (FH)
- Cap end
- Air valve
- Non Dwr Cymru
- Stop tap
- Water Treatment Works
- Water Pumping Station
- Existing main
- Non-operational main
- Raw Water

NB: Water main symbol colour indicates the type.

LIGHT BLUE - Trunk
DARK BLUE - Distribution
YELLOW - Raw Water

Notes:

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Map Ref:	317346.167590
Map Scale	1: 3,000
PrintedBy	Bridget Jones
PrintedOn	03/08/2026

Kiln
Hopkins Mount
Hopkins Mount
57.0m
44.5m
30.2m
110mm HPPE 1997
El Sub Sta
TCB
3IN. AC 1940
2IN. AC 1930
Park
Hind
0.75IN. AC 1930
29.3m
3IN. AC 1930
15.8m
22.6m
Path
28.7m
Slope
Shingle
Shingle
Kiln
2IN. AC 1930
2IN. AC 1930
21.9m
Rock
Estate
9.8m
16.5m
8.2m
SM
20.1m
Rock and Shingle
Ball Rock
Rock
Rock
St Mary's Well Bay
Mean Low Water
Rock and Shingle
Rock and Shingle
Ball Bay
Mean Low Water



Notes

Utility Report Content & Information

1. Purpose of Utilities Report

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2. Compilation of the Utilities Report

The Utilities Report is a compilation of Utility Company record plans. These are obtained via application to the Utility Companies following a geographic search to determine which Companies are in a given area. The data is provided by the Utility Companies in a variety of formats including faxed plans, pdf files, digital drawing files and paper drawings. They are all converted to pdf files for inclusion in the report. The quality of the plans therefore varies. A quality assured process is followed for each report. This requires that it is checked at different stages during the process before being subjected to a final assessment prior to issue.

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4. Completeness

Whilst every effort is made to locate all Utility Companies in a given area, due to the existence of redundant utilities, the emergence of new companies and the combining of, takeover or sale of existing Companies, we cannot guarantee to provide details on all utilities in a given area.

5. Date

Due to the Utility Companies plans being regularly changed and updated, the Utility Report is only valid at the time of production.

6. Liability

For the reasons given in 1 - 5 above neither emapsite Ltd nor Subtechnics Limited can accept any liability for or offer any guarantees for the report or the content. No representation is made by either emapsite Ltd and/or Subtechnics Limited as to the accuracy, completeness, sufficiency or otherwise of this report.

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8. Assignment

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Legend

Utility Line Types

Survey Area

Line	Description
	Survey Area

Telecom Systems

Line	Description
ATK-D	Atkins/Vodafone
BOX-D	Box Broadband
BT-D	BT Openreach
CTY-D	Cityfibre
CO-D	Colt
CSP-D	CSP
DUCT-D	Empty Duct
EU-D	euNetworks
EXA-D	EXA
GAM-D	Gamma
GIG-D	Gigaclear
GTA-D	Cambridge Granta
GTC-D	GTC
OCU-D	OCU
JRS-D	Jurassic Fibre
KC-D	KCOM
L3-D	Level 3
MBNL-D	MBNL
NEO-D	NEOS
NTT-D	NTT
SKY-D	SKY
TAT-D	TATA
TA-D	Telia Networks
TM-D	Trafficmaster
TEL-D	Unknown
VZ-D	Verizon
VM-D	Virgin
ZA-D	Zayo

Control Systems

Line	Description
TFL-D	Transport For London
CCTV-D	Surveillance System

Drainage Systems

Line	Description
CD-D	Combined Drainage Flow Direction >
FW-D	Foul Drainage Flow Direction >
SW-D	Surface Water Drainage Flow Direction >
DRNG-D	Unknown
NR-D	Network Rail

Electrical Systems

Line	Description
HV-D	High Voltage
HV/OH-D	High Voltage Overhead
LV-D	Low Voltage
LV/OH-D	Low Voltage Overhead
SL-D	Street Lighting
ELEC-D	Unknown
ELEC/GTC-D	GTC
ELEC/LU-D	London Underground

Gas Systems

Line	Description
GAS/HP-D	High Pressure
GAS/IP-D	Intermediate Pressure
GAS/LP-D	Low Pressure
GAS/MP-D	Medium Pressure
GAS-D	Unknown Pressure
GAS/ESP-D	ESP
GAS/FUL-D	Fulcrum
GAS/GTC-D	GTC

Water Systems

Line	Description
FIRE-D	Fire Extinguishing Supply
POT-D	Potable Supply
WTR-D	Unknown

Symbology

- Fire Hydrant
- General Purpose Water Valve
- Water Air Valve
- Water Pressure Control Valve
- Water Meter
- Water Customer Supply
- Water Fire Supply
- Bt Joint Box
- Bt Manhole
- Bt Cabinet
- Virgin Media Cabinet
- Combined Sewer Manhole
- Foul Sewer Manhole
- Storm Sewer Manhole
- Drainage Control Valve
- Outfall
- Gas Valve
- Bt Pole
- Bt Primary Cross Connection Point
- Bt Distribution Point
- Virgin Media Manhole

Sheet Layout



Revision History

Rev	Date	Description Of Change	By
A	18/06/2025	FINAL	SAS

Client
Trydan Gwyrdd Cymru

Site
P000117

Drawing Title
Digitised Desktop Utility Survey

Project Number	Scale	Drawn Date
SP25811	1:1000	18/06/2025

Surveyed By	Drawn By	Checked By
SAS	N/A	SAS


Status	Sheet	Revision
FINAL	1 OF 4	A

Drawing Number
PROJECT - ORIGINATOR - TYPE - UNIQUE SEQUENTIAL NUMBER
SP25811-TEC-DR-0001

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THE SURVEY ASSOCIATION



Notes

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Legend

Utility Line Types

Survey Area
- Survey Area

Telecom Systems
- ATK–D Atkins/Vodafone
- BOX–D Box Broadband
- BT–D BT Openreach
- CTY–D Cityfibre
- CO–D Colt
- CSP–D CSP
- DUCT–D Empty Duct
- EU–D euNetworks
- EXA–D EXA
- GAM–D Gamma
- GIG–D Gigaclear
- GTA–D Cambridge Granta
- GTC–D GTC
- OCU–D OCU
- JRS–D Jurassic Fibre
- KC–D KCOM
- L3–D Level 3
- MBNL–D MBNL
- NEO–D NEOS
- NTT–D NTT
- SKY–D SKY
- TAT–D TATA
- TA–D Telia Networks
- TM–D Trafficmaster
- TEL–D Unknown
- VZ–D Verizon
- VM–D Virgin
- ZA–D Zayo

Control Systems
- TFL–D Transport For London
- CCTV–D Surveillance System

Drainage Systems
- CD–D Combined Drainage Flow Direction >
- FW–D Foul Drainage Flow Direction >
- SW–D Surface Water Drainage Flow Direction >
- ORNG–D Unknown
- NR–D Network Rail

Electrical Systems
- HV–D High Voltage
- HV/OH–D High Voltage Overhead
- LV–D Low Voltage
- LV/OH–D Low Voltage Overhead
- SL–D Street Lighting
- ELEC–D Unknown
- ELEC/GTC–D GTC
- ELEC/LU–D London Underground

Gas Systems
- GAS/HP–D High Pressure
- GAS/IP–D Intermediate Pressure
- GAS/LP–D Low Pressure
- GAS/MP–D Medium Pressure
- GAS–D Unknown Pressure
- GAS/ESP–D ESP
- GAS/FUL–D Fulcrum
- GAS/GTC–D GTC

Water Systems
- FIRE–D Fire Extinguishing Supply
- POT–D Potable Supply
- WTR–D Unknown

Symbology

- Fire Hydrant
- General Purpose Water Valve
- Water Air Valve
- Water Pressure Control Valve
- Water Meter
- Water Customer Supply
- Water Fire Supply
- Bt Joint Box
- Bt Manhole
- Bt Cabinet
- Virgin Media Cabinet
- Combined Sewer Manhole
- Foul Sewer Manhole
- Storm Sewer Manhole
- Drainage Control Valve
- Outfall
- Gas Valve
- Bt Pole
- Bt Primary Cross Connection Point
- Bt Distribution Point
- Virgin Media Manhole

Sheet Layout



Revision History

Rev	Date	Description Of Change	By
A	18/06/2025	FINAL	SAS

Client: Trydan Gwyrdd Cymru

Site: P000117

Drawing Title: Digitised Desktop Utility Survey

Project Number	Scale	Drawn Date
SP25811	1:1000	18/06/2025

Surveyed By	Drawn By	Checked By
SAS	N/A	SAS

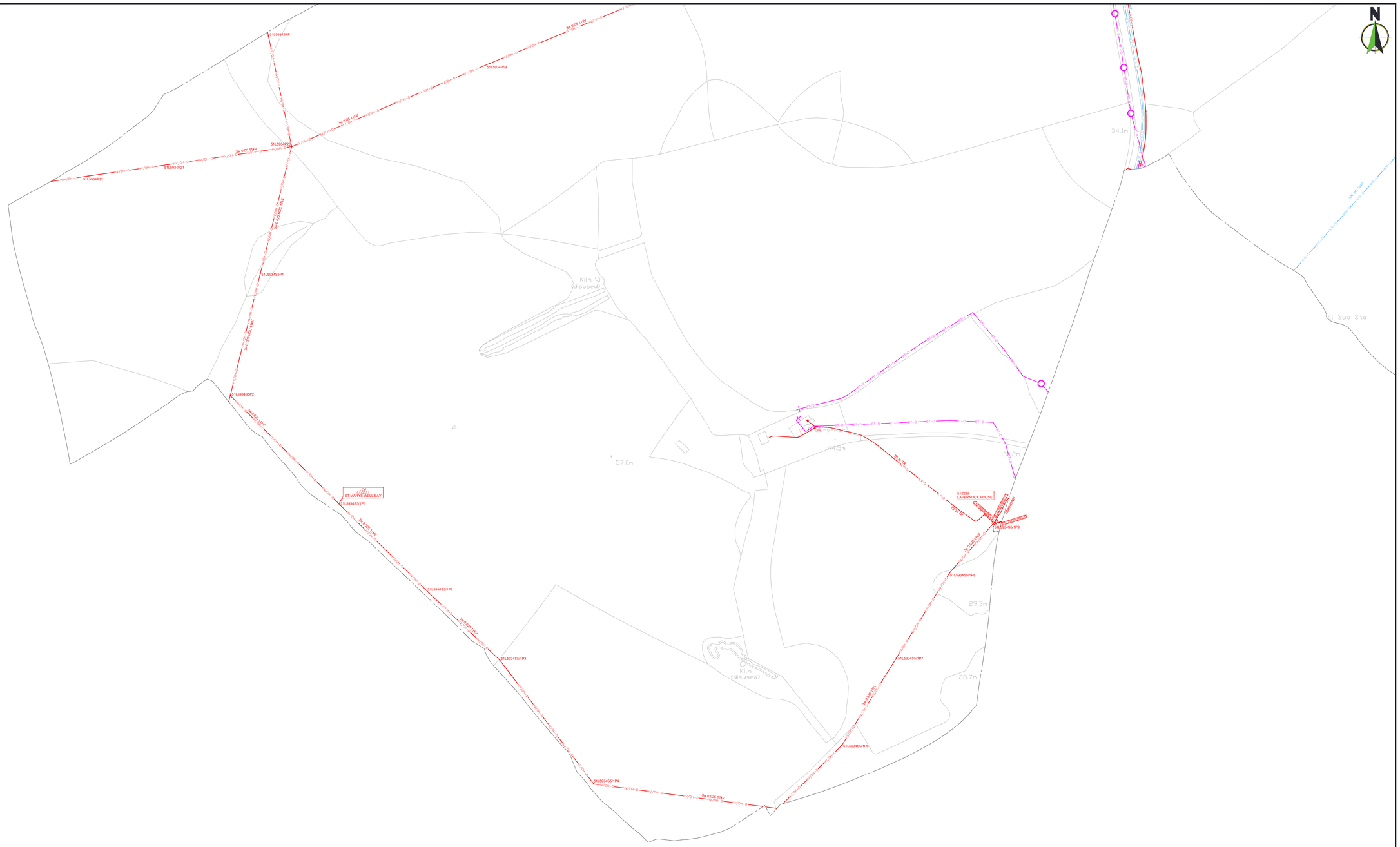
Status	Sheet	Revision
FINAL	2 OF 4	A

Drawing Number
PROJECT - ORIGINATOR - TYPE - UNIQUE SEQUENTIAL NUMBER
SP25811-TEC-DR-0001

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W: technicsgroup.com

A0-L



Notes

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Legend

Utility Line Types

Survey Area

- Survey Area

Telecom Systems

- Atkins/Vodafone
- Broadband
- BT Openreach
- Cityfibre
- CoX
- CSP
- Duct/ Duct
- eufleetworks
- EXA
- Gamma
- Gigaclear
- Lcambridge Granta
- Colt
- OCU
- Jurassic Fibre
- KCOM
- Level 3
- MBNL
- Neos
- NTT
- SKY
- TATA
- Telia Networks
- Thamesmaster
- Unknown
- Verizon
- Virgin
- Zayo

Control Systems

- Transport For London
- Surveillance System

Drainage Systems

- Combined Drainage Flow Direction >
- Foul Drainage Flow Direction >
- Surface Water Drainage Flow Direction >
- Unknown
- Network Rail

Electrical Systems

- High Voltage
- High Voltage Overhead
- Low Voltage
- Low Voltage Overhead
- Street Lighting
- Unknown
- GTC
- London Underground

Gas Systems

- High Pressure
- Intermediate Pressure
- Low Pressure
- Medium Pressure
- Unknown Pressure
- ESP
- Fulcrum
- GTC

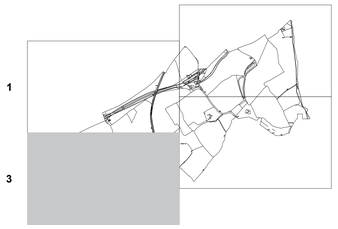
Water Systems

- Fire Extinguishing Supply
- Potable Supply
- Unknown

Symbology

- Fire Hydrant
- General Purpose Water Valve
- Water Air Valve
- Water Pressure Control Valve
- Water Meter
- Water Customer Supply
- Water Fire Supply
- Bt Joint Box
- Bt Manhole
- Bt Cabinet
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Sheet Layout



Revision History

Rev	Date	Description Of Change	By
A	18/06/2025	FINAL	SAS

Client: Trydan Gwyrdd Cymru

Site: P000117

Drawing Title: Digitised Desktop Utility Survey

Project Number: SP25811

Scale: 1:1000

Drawn Date: 18/06/2025

Surveyed By: SAS

Drawn By: N/A

Checked By: SAS

Status: FINAL

Sheet: 3 OF 4

Revision: A

Drawing Number: PROJECT - ORGINATOR - TYPE - UNIQUE SEQUENTIAL NUMBER

SP25811-TEC-DR-0001

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THE SURVEY ASSOCIATION



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The Utilities Report is intended to be for project planning and feasibility only. It is not suitable to be used for construction or excavation purposes. The existence of utilities on the plans does not imply that they are suitable in size, capacity, type or location for the project purpose. The Utility Companies should be contacted directly for clarification in this regard.

2. Compilation of the Utilities Report

The Utilities Report is a compilation of Utility Company record plans. These are obtained via application to the Utility Companies following a geographic search to determine which Companies are in a given area. The data is provided by the Utility Companies in a variety of formats including faxed plans, pdf files, digital drawing files and paper drawings. They are all converted to pdf files for inclusion in the report. The quality of the plans therefore varies. A quality assured process is followed for each report. This requires that it is checked at different stages during the process before being subjected to a final assessment prior to issue.

3. Limitations and Accuracy of the data

Each Utility Company has its own disclaimer statement in respect of the information they provide. They do not guarantee or provide a warranty for the data. The Utility Company disclaimers should be referred to when considering the accuracy and completeness of the data. Generally the plans provided are for guidance only and are not guaranteed to be up to date or to be a complete record of the Utility Company plant in a given area.
Some Utility Companies only show main utilities. Therefore service pipes or cables may not be shown on the plans but they may be present on the site.

Some Utility Companies state that the utilities may deviate from the route and position shown on the plans.

Due to the time delay between installation of, or repair or upgrading of utilities and the subsequent updating of the Utility Companies plans, it should be noted that there could be utilities present that are not shown on the plans.

The user shall make further enquires and investigations to satisfy himself as to the adequacy of the plans and position of the utilities. The exact position of the utilities should be verified by the use of suitable detecting devices and safe digging practices in accordance with HS(G)47. Further advice on the location of the utilities should be requested from the owner.

4. Completeness

Whilst every effort is made to locate all Utility Companies in a given area, due to the existence of redundant utilities, the emergence of new companies and the combining of, takeover or sale of existing Companies, we cannot guarantee to provide details on all utilities in a given area.

5. Date

Due to the Utility Companies plans being regularly changed and updated, the Utility Report is only valid at the time of production.

6. Liability

For the reasons given in 1 - 5 above neither emapsite Ltd nor Subtechnics Limited can accept any liability for or offer any guarantees for the report or the content. No representation is made by either emapsite Ltd and/or Subtechnics Limited as to the accuracy, completeness, sufficiency or otherwise of this report.

7. Copyright

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8. Assignment

The Utility Report cannot be assigned to any other party without the prior written consent of Subtechnics Limited.

Legend

Utility Line Types

Survey Area

Line	Description
— – – —	Survey Area

Telecom Systems

Line	Description
ATK-D	Atkins/Vodafone
BOX-D	Box Broadband
BT-D	BT Openreach
CTY-D	Cityfibre
CO-D	Colt
CSP-D	CSP
DUCT-D	Empty Duct
EU-D	euNetworks
EXA-D	EXA
GAM-D	Gamma
GIG-D	Gigaclear
GTA-D	Cambridge Granta
GTC-D	GTC
OCU-D	OCU
JRS-D	Jurassic Fibre
KC-D	KCOM
L3-D	Level 3
MBNL-D	MBNL
NEO-D	NEOS
NTT-D	NTT
SKY-D	SKY
TAT-D	TATA
TA-D	Telia Networks
TM-D	Trafficmaster
TEL-D	Unknown
VZ-D	Verizon
VM-D	Virgin
ZA-D	Zayo

Control Systems

Line	Description
TFL-D	Transport For London
CCTV-D	Surveillance System

Drainage Systems

Line	Description
CD-D	Combined Drainage Flow Direction >
FW-D	Foul Drainage Flow Direction >
SW-D	Surface Water Drainage Flow Direction >
DRNG-D	Unknown
NR-D	Network Rail

Electrical Systems

Line	Description
HV-D	High Voltage
HV/OH-D	High Voltage Overhead
LV-D	Low Voltage
LV/OH-D	Low Voltage Overhead
SL-D	Street Lighting
ELEC-D	Unknown
ELEC/GTC-D	GTC
ELEC/LU-D	London Underground

Gas Systems

Line	Description
GAS/HP-D	High Pressure
GAS/IP-D	Intermediate Pressure
GAS/LP-D	Low Pressure
GAS/MP-D	Medium Pressure
GAS-D	Unknown Pressure
GAS/ESP-D	ESP
GAS/FUL-D	Fulcrum
GAS/GTC-D	GTC

Water Systems

Line	Description
FIRE-D	Fire Extinguishing Supply
POT-D	Potable Supply
WTR-D	Unknown

Symbology

- Fire Hydrant
- General Purpose Water Valve
- Water Air Valve
- Water Pressure Control Valve
- Water Meter
- Water Customer Supply
- Water Fire Supply
- Bt Joint Box
- Bt Manhole
- Bt Cabinet
- Virgin Media Cabinet
- Combined Sewer Manhole
- Foul Sewer Manhole
- Storm Sewer Manhole
- Drainage Control Valve
- Outfall
- Gas Valve
- Bt Pole
- Bt Primary Cross Connection Point
- Bt Distribution Point
- Virgin Media Manhole

Sheet Layout



Revision History

Rev	Date	Description Of Change	By
A	18/06/2025	FINAL	SAS

Client
Trydan Gwyrdd Cymru

Site
P000117

Drawing Title
Digitised Desktop Utility Survey

Project Number	Scale	Drawn Date
SP25811	1:1000	18/06/2025

Surveyed By	Drawn By	Checked By
SAS	N/A	SAS

Status	Sheet	Revision
FINAL	4 OF 4	A

Drawing Number
PROJECT - ORIGINATOR - TYPE - UNIQUE SEQUENTIAL NUMBER
SP25811-TEC-DR-0001

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A0-L

Annex C – Greenfield Runoff Calculations

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

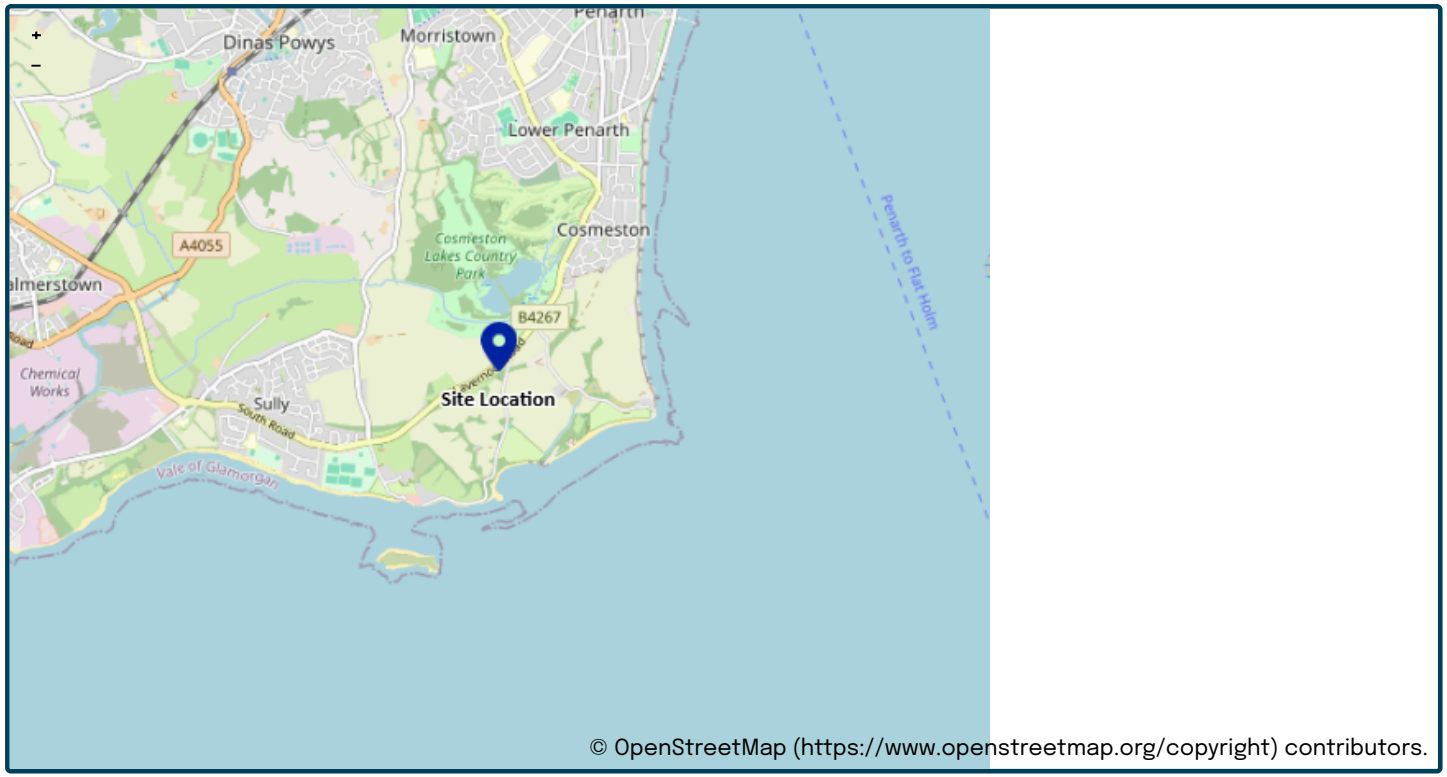
Project details

Date	14/10/2026
Calculated by	
Reference	
Model version	2.2.3

Location

Site name

Site location



Site easting (British National Grid) 317476

Site northing (British National Grid) 168324

Site details

Total site area (ha) 0.324 ha

Greenfield runoff

Method

Method	FEH statistical (2025)

FEH statistical (2025)

	My value		Map value
SAAR9120 (mm)	956 mm		
BFIHOST19scaled	0.29		
QMed-QBar conversion	1.075		1.075
QMed (l/s)	3 l/s		
QBar (FEH statistical 2025) (l/s)	3.2 l/s		

Growth curve factors

	My value		Map value
Hydrological region	9		9
1 year growth factor	0.88		
2 year growth factor	0.93		
10 year growth factor	1.42		
30 year growth factor	1.78		
100 year growth factor	2.18		
200 year growth factor	2.46		

Results

Method	FEH statistical (2025)	
Flow rate 1 year (l/s)	2.9	l/s
Flow rate 2 year (l/s)	3.0	l/s
Flow rate 10 years (l/s)	4.6	l/s
Flow rate 30 years (l/s)	5.8	l/s
Flow rate 100 years (l/s)	7.1	l/s
Flow rate 200 years (l/s)	8.0	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at uksuds.com (https://www.uksuds.com/). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Annex D – Indicative Causeway Flow Model

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)
1			100.500	1200
Dummy Basin	0.324	5.00	100.500	1200
Dummy Infiltration	0.324	5.00	100.500	

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

15	60	180	360	600	960	2160
30	120	240	480	720	1440	2880

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	0	0	0
100	40	0	0

Node Dummy Basin Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	1.000	Sump Available	✓
Replaces Downstream Link	x	Product Number	CTL-SHE-0085-3200-1000-3200
Invert Level (m)	99.500	Min Outlet Diameter (m)	0.100
Design Depth (m)	1.000	Min Node Diameter (mm)	1200
Design Flow (l/s)	3.2		

Node Dummy Basin Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	99.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	300.0	300.0	1.000	512.5	524.0	1.001	512.7	524.2

Flow+ v14.0 Copyright © 1988-2026 Causeway Technologies Ltd

Node Dummy Infiltration Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00360	Safety Factor	2.0	Invert Level (m)	99.500
Side Inf Coefficient (m/hr)	0.00360	Porosity	1.00	Time to half empty (mins)	13723

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	425.0	350.0	1.000	900.0	833.4	1.001	900.0	833.5

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute summer	1	390	99.527	0.038	2.6	0.0000	0.0000	OK
600 minute summer	Dummy Basin	390	99.648	0.148	8.0	46.9182	0.0000	OK
2880 minute summer	Dummy Infiltration	2820	99.710	0.210	2.7	99.8855	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute summer	Dummy Basin	1.000	1	2.6	0.462	0.042	0.0193	61.2
2880 minute summer	Dummy Infiltration	Infiltration		0.2				

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	1	110	99.531	0.042	3.2	0.0000	0.0000	OK
360 minute winter	Dummy Basin	344	99.891	0.391	20.9	133.9226	0.0000	SURCHARGED
2880 minute winter	Dummy Infiltration	2820	99.943	0.443	3.9	234.7149	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	Dummy Basin	1.000	1	3.2	0.487	0.051	0.0221	91.1
2880 minute winter	Dummy Infiltration	Infiltration		0.3				

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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	1	104	99.531	0.042	3.2	0.0000	0.0000	OK
360 minute winter	Dummy Basin	344	99.980	0.480	25.2	169.1738	0.0000	SURCHARGED
2880 minute winter	Dummy Infiltration	2880	100.026	0.526	4.7	289.3854	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	Dummy Basin	1.000	1	3.2	0.487	0.051	0.0221	92.4
2880 minute winter	Dummy Infiltration	Infiltration		0.3				

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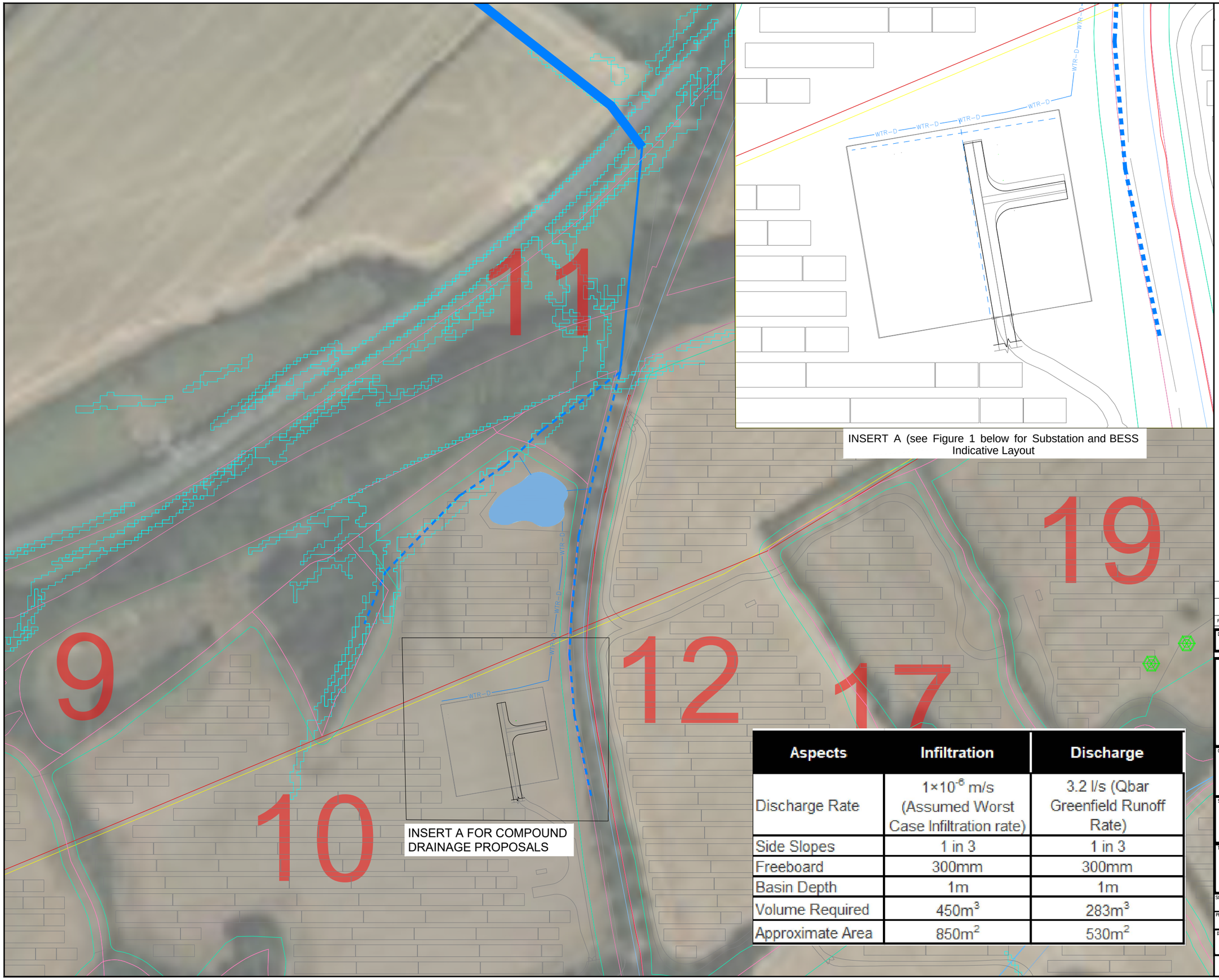
Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	1	23	99.531	0.042	3.2	0.0000	0.0000	OK
480 minute winter	Dummy Basin	472	100.194	0.694	28.1	260.0580	0.0000	SURCHARGED
2880 minute winter	Dummy Infiltration	2880	100.202	0.702	6.6	415.5506	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	Dummy Basin	1.000	1	3.2	0.487	0.051	0.0221	101.2
2880 minute winter	Dummy Infiltration	Infiltration		0.3				

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Annex E – Indicative Drainage Layout



INSERT A (see Figure 1 below for Substation and BESS Indicative Layout

INSERT A FOR COMPOUND DRAINAGE PROPOSALS

Aspects	Infiltration	Discharge
Discharge Rate	1×10^{-6} m/s (Assumed Worst Case Infiltration rate)	3.2 l/s (Qbar Greenfield Runoff Rate)
Side Slopes	1 in 3	1 in 3
Freeboard	300mm	300mm
Basin Depth	1m	1m
Volume Required	$450m^3$	$283m^3$
Approximate Area	$850m^2$	$530m^2$

DO NOT SCALE

NOTES:
1) ATTENUATION SHOULD BE DESIGNED TO ACCOMMODATE THE 1 IN 100 (1%) RAINFALL EVENT + CLIMATE CHANGE ALLOWANCE, BASED ON FEH RAINFALL DATA FOR EITHER THE TESTED INFILTRATION RATE OR GREENFIELD RUNOFF RATE. INDICATIVE VALUES FOR THESE ARE INCLUDED WITHIN THE ODS
2) THE LOCATION AND SIZING AND ROUTING OF DRAINAGE ALIGNMENTS, ELEMENTS AND BASINS IS ENTIRELY INDICATIVE AT THIS STAGE AND ACTS PURELY TO DEMONSTRATE THE FEASIBILITY OF MANAGING SURFACE WATER RUNOFF RATES IN LINE WITH LLFA AND SAB REQUIREMENTS. DETAILED DESIGN OF THE DRAINAGE SYSTEM WOULD BE CARRIED OUT BY THE APPOINTED CONTRACTOR POST CONSENT AND IN CONSULTATION WITH THE APPLICABLE SAB AND FULL SAB CONSENT.
3) INDICATIVE ANTICIPATED DISCHARGE LOCATIONS ARE IDENTIFIED WITHIN THE DRAWINGS. THESE WOULD BE SUBJECT TO DETAILED SURVEYS TO DEMONSTRATE A SUITABLE DISCHARGE CHANNEL AND SUITABLE DOWNSTREAM CONVEYANCE INTO THE WIDER WATERCOURSE NETWORK. SURVEYS SHOULD ALSO BE CARRIED OUT TO FURTHER DETAIL TOPOGRAPHICAL CONSTRAINTS AROUND CONVEYANCE ROUTING.
4) DISCHARGE RATES WOULD BE LIMITED TO THE EXISTING GREENFIELD RUNOFF RATES FOR EVENTS UP TO THE 1 IN 100 + CLIMATE CHANGE ALLOWANCE STORM AT RATES INDICATED WITHIN THE ODS

PV PANEL
OVERHEAD LINE
SURFACE WATER FLOOD ZONE
ATTENUATION/INFILTRATION BASIN
COMPOUND DRAINAGE (EG FILTER DRAIN)
PROPOSED CONNETCING PIPEWORK
KNOWN WATER OURSE
ASSUMED WATERCOURSE

REV	DATE	BY	DESCRIPTION	CHK	APP
B	08/10/2026	RP	UPDATED INDICATIVE LAYOUT	AM	VM
A	28/07/2026	RP	INDICATIVE LAYOUT	AM	VM

DRAWING STATUS: S2 - FOR INFORMATION

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wsp.com

CLIENT: Trydan Gwyrdd Cymru

SITE/PROJECT: Cosmeston Solar PV

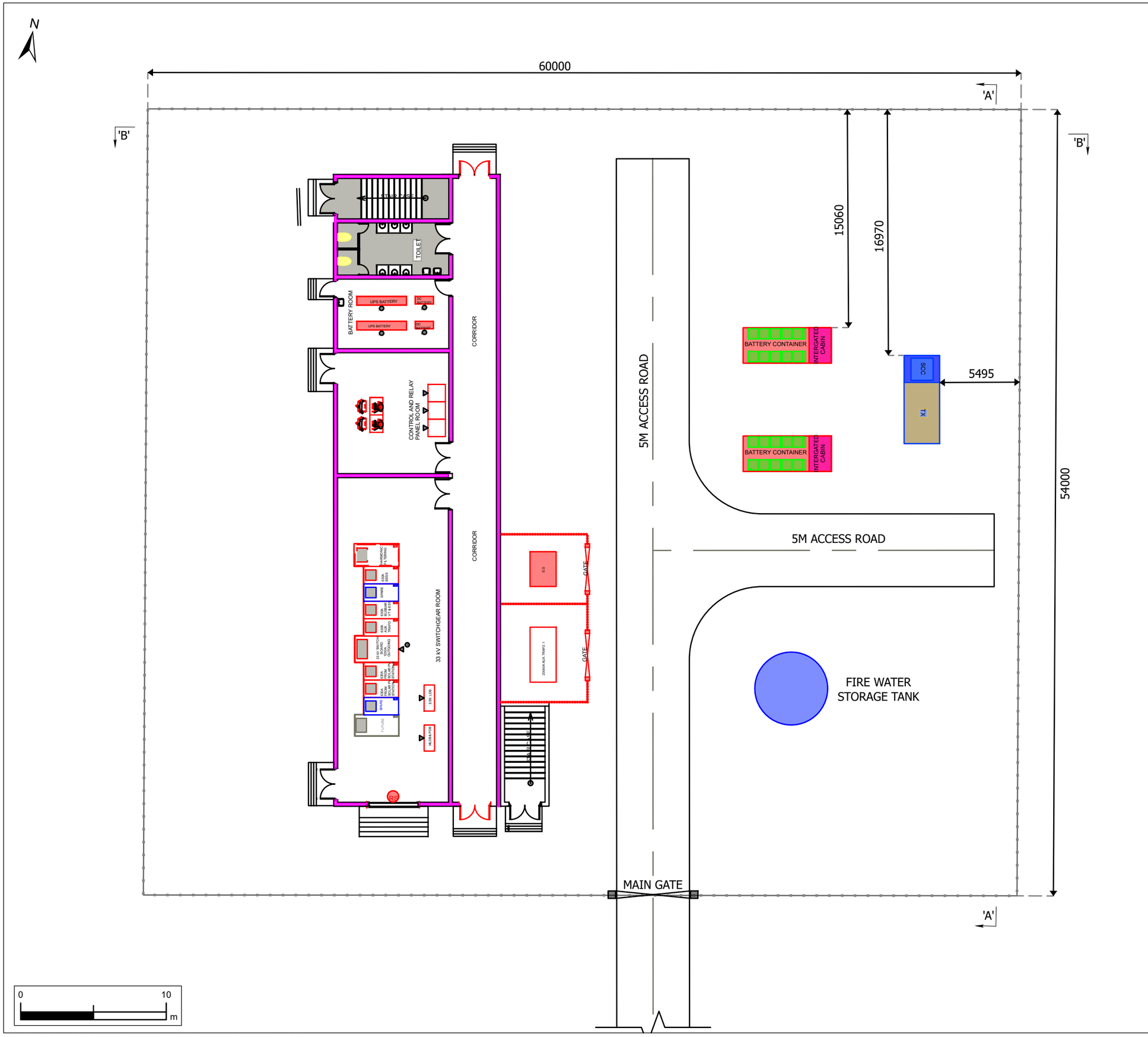
TITLE: Indicative Drainage Layout

SCALE @ A3:	CHECKED:	APPROVED:
1:3000	AM	VM

PROJECT NO:	DESIGNED:	DRAWN:	DATE:
UK0043441.5050	RP	RP	JULY 2026

DRAWING No: UK0043441.5050-DR-DR-0001 REV: B

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Legend

- Substation Fencing
- Battery and PCS Enclosure
- PCS Transformer Enclosure
- Fire Water Storage Tank

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Rev.	Date	Revision Description	Drawn	Check	Rev.	App.
0	05/11/2026	Initial Issue	AR	RJ	DP	SM

Scale @ A3 | Scale: 1:250 | DO NOT SCALE

Project: Fferm Solar Larnog

Drawing Title: Substation and Battery Energy Storage Systems (BESS) Layout

Trydan Gwyrdd Cymru

Drawing No.