Galileo 03 Ltd.

Mynydd Ty-talwyn Energy Park - Environmental Statement Volume III

Appendix 6.1: Watercourse Crossing Baseline Assessment

Project Reference: 663870

APRIL 2026

RSK GENERAL NOTES

Project No.: 680985-R1(04)-Watercourse Crossing Baseline Assessment

Site: Mynydd Ty-talwyn Energy Park

Title: ES Volume III, Appendix 6.1: Watercourse Crossing Baseline Assessment

Client: Galileo 03 Ltd.

Date: April 2026

Office: Wigan

Status: DNS Submission

Issue No	Version/Details	Date issued	Author	Reviewed by	Approved by
00	Draft for client comment	13.03.25	EW	MC/CW	CW
01	Update to Draft with client comments	26.03.25	EW	CW	CW
02	Update following legal review	10.04.25	EW	CW	CW
03	Update following PAC	01.10.25	EW	CW	CW
04	Updated layout plan (change to ecological mitigation only)	16.04.26	EW	SP	SP

CONTENTS

1 INTRODUCTION

1.1.1 This Watercourse Crossing Baseline Assessment has been prepared by RSK Land and Development Engineering Ltd on behalf of Galileo 03 Ltd (part of Galileo Empower UK Ltd) (hereinafter referred to as 'Galileo' or the 'Applicant'). The assessment is in support of the Development of National Significance (DNS) Application for Mynydd Ty-talwyn Energy Park (the 'Proposed Development'). The 'Site' is defined as the land within the redline boundary in which the Proposed Development is located.

1.1.2 The Proposed Development comprises the construction, operation, and subsequent decommissioning, of up to six wind turbines, ground mounted solar photovoltaic (PV) modules, one project substation and ancillary infrastructure works, as shown in **Figure 1.1** overleaf.

1.1.3 As part of the Environmental Impact Assessment (EIA) process, it was identified that watercourse crossings shall be required to serve the Proposed Development. Design iterations for the layout of the Proposed Development have taken into account the sensitivity of surface water resources, and the infrastructure layout has been configured such that the number of crossings required has been minimised, while taking into account further environmental and physical constraints identified. This document forms part of a Technical Appendix to the Environmental Statement (**ES**) **Volume II, Chapter 6: Water** and has been informed by a proportionate Water Features Survey.

1.1.4 This report outlines the methodology employed for data collection during Site visits and provides an annotated photographic archive of the Site walkover. The purpose of this document is to provide a conceptual assessment of proposed watercourse crossings including the strategy for their development, but does not comment on detailed engineering design. It also assists in the identification of regulatory licensing requirements.

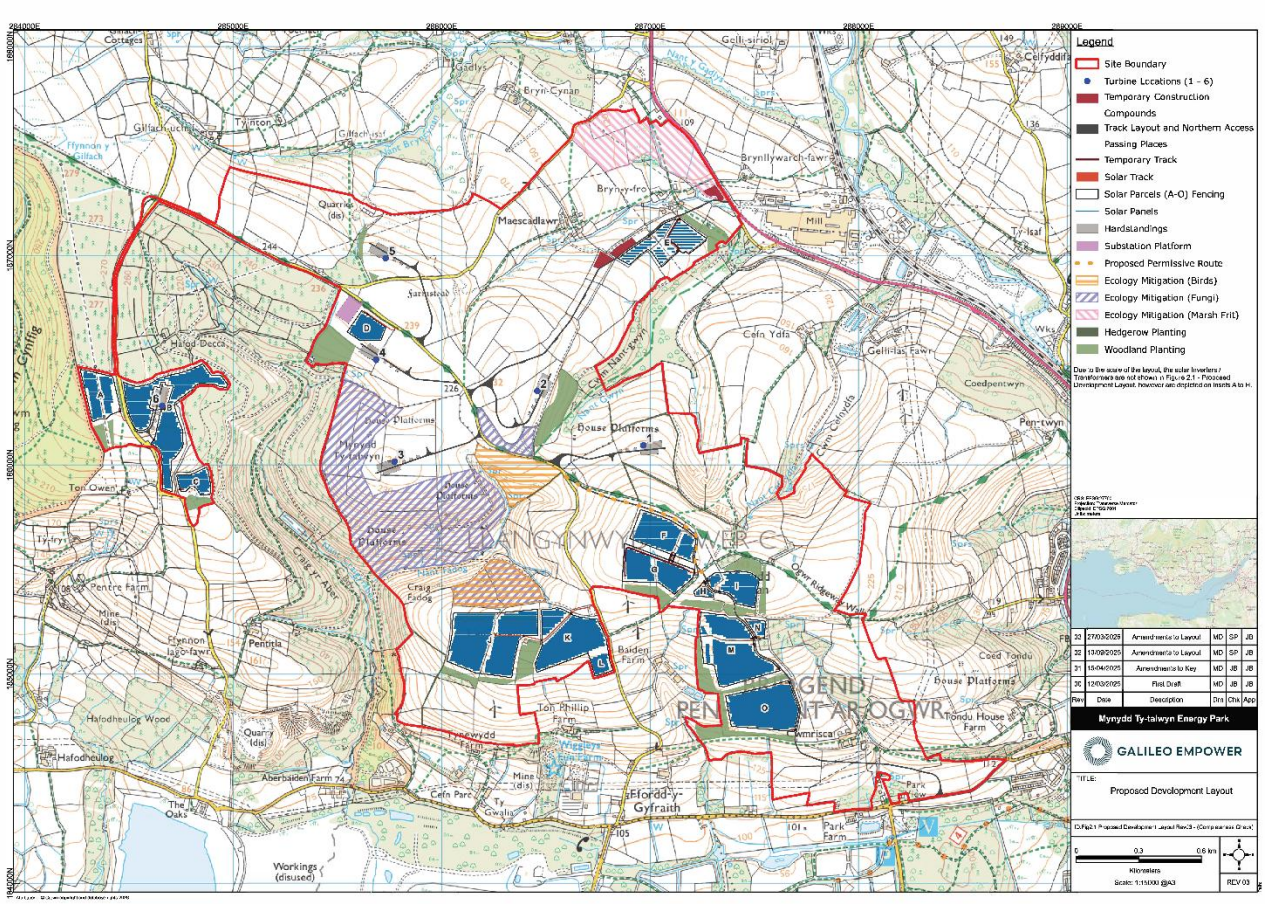


Figure 1.1 Proposed Development Plan

2 LEGISLATION

2.1.1 Principal legislation regarding the water environment is provided by the European Union (EU) Water Framework Directive (WFD)[1] which aims to protect and enhance the quality of surface freshwater (including lakes, rivers and streams), groundwater, Groundwater Dependent Terrestrial Ecosystems (GWDTEs), estuaries and coastal waters.

2.1.2 The key objectives of the WFD, relevant to this assessment are:

- To prevent deterioration and enhance aquatic ecosystems; and
- To establish a framework for protection of surface freshwater and groundwater.

2.1.3 This assessment therefore must have due regard to the requirements of the WFD, to ensure that any activities proposed either in, or near to watercourses as part of the Proposed Development, must not have a detrimental impact upon these objectives. A separate WFD screening exercise has been undertaken for the Proposed Development, as reported in **ES Volume III, Appendix 6.3: Water Framework Directive Assessment**.

2.1.4 All watercourses assessed within this report are Ordinary Watercourses, which are defined as those watercourses which are not a Main River. This definition includes small drains and ditches. The Land Drainage Act (1991)[2] (amended by the Flood and Water Management Act 2010[3]), requires that all built structures over/within watercourses, will require a Land Drainage Consent. This can be applied for from the Local Planning Authority, being either Bridgend County Borough Council or Neath Port Talbot Council.

[1] The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.

[2] The Land Drainage Act 1991.

[3] Flood and Water Management Act 2010.

3 METHODOLOGY

3.1 Desk Study

3.1.1 The desk study consisted of a review of the publicly available information regarding the Site, including Ordnance Survey (OS) maps and Natural Resources Wales (NRW) interactive mapping platforms. This enabled a comparison of the identified features with the Proposed Development to identify watercourses which would require crossings by the proposed track.

3.2 Site Visit

3.2.1 Following the desk study, a site visit was undertaken to obtain information relating to the identified crossing points on each relevant watercourse.

3.2.2 Site visit of the crossing points were conducted on the 27 February 2025, conducted in slightly wet, mild (approximately 10 ºC) conditions after a moderately wet period. The field assessment encompassed recording of key data, and the following information was recorded/estimated at each watercourse crossing location:

- Description of the ditch/watercourse including localised connectivity, proximity of vegetation (hedgerows/trees/in-channel reedbeds etc), bank levels etc;
- Photographs of existing bank/watercourse condition, observed nearby flooding, and connectivity to other nearby systems;
- Recording specific dimensions of the crossing points (depending on accessibility). These included bed width of the watercourse, bank full width of the watercourse and depth of the watercourse (if possible); and
- Current in-channel water depth and flow direction were also taken where possible.

3.2.3 In addition, OS mapping provided an overview of the area surrounding each watercourse, detailing upstream and downstream watercourse connectivity, extents of watercourse catchments, as well as identifying any receptors and pathways that were not visible or accessible during the Site visit.

3.2.4 During the Site visit, existing access crossings were observed in locality to the proposed crossing points across the surveyed Ordinary Watercourses, and as such have also been surveyed as part of this assessment.

- The proposed crossing of Nant Cwm-bach, located adjacent to Cwm Risca Lane in the south-east of the Site, referred to as PWC1 in this report; and
- The proposed crossing of an unnamed watercourse in the north-east of the Site, at Bryn-y-fro Farm (tributary of Afon Llynfi), referred to as PWC2 in this report.

4 SURVEY FINDINGS

4.1.1 There are no Main Rivers which the Proposed Development crosses, and as such, the proposed crossing points are across Ordinary Watercourses only.

4.1.2 A total of two proposed watercourse crossing points have been identified across the Proposed Development. These are:

- A proposed crossing of Nant Cwm-bach, located adjacent to Cwm Risca Lane in the south-east of the Site; and
- A proposed crossing of an unnamed watercourse in the north-east of the Site, at Bryn-y-fro Farm (tributary of Afon Llynfi).

4.1.3 Four existing crossings were surveyed along Nant Cwm-bach, near to PWC1. These are shown in **Annex A** as EWC1, EWC2, EWC3 and EWC4.

4.1.4 One existing crossing was surveyed along the unnamed watercourse, near to PWC2. This is labelled as EWC5 in **Annex A**.

4.1.5 The locations of each identified watercourse crossing are presented in the Watercourse Crossing Locations included in **Annex A**.

4.1.6 Site notes, annotated site photographs and location plans can be seen as a full archive included as **Annex B**.

5 TYPES OF CROSSINGS

5.1.1 The most appropriate watercourse crossing type required at each location has been identified depending on hydrological, physical and ecological characteristics. The potential crossing types are described below:

- Single span structures - recommended where there is a need to minimise disturbance to the bank and bed of the watercourse. Where it is possible to set back abutments from the watercourse, it should be possible to maintain bank habitats under the crossing. Taking into account the maximum width of crossings to be undertaken on the Proposed Development, it is not anticipated that instream supports will be necessary at any crossings.
- Bottomless Box/Arch Culverts - can be used where there are watercourses narrower than those appropriate for bridge construction, but which have a requirement to provide mammal and/or fish passage and ensure sufficient hydraulic capacity during peak flow periods. Arches minimise disruption to the stream bed.
- Circular Culverts - where potential impact is negligible due to the size, location or typology of the watercourse, circular culverts can be embedded into the channel to allow the natural bed to re-establish. Where necessary, provision can also be made for mammals adjacent to the culvert. Where a circular culvert is utilised, it is assumed that none of either natural bed material, water velocity, or depth are critical other than in respect of very localised hydraulics.
- Porous granular rock fill blanket and perforated pipes - where there is no clearly defined channel flow, flow can be maintained by a drainage blanket wrapped in geotextile placed below the road construction. Where such a crossing structure is utilised, flow is predominantly sub-surface interflow and a porous fill below the track which provides flow continuity without concentrating the discharges into a narrow channel.

5.1.2 The NRW scoping comments (**ES Volume III, Appendix 1.2: Scoping Direction**) for the Proposed Development detailed that a single/clear-span bridge would be the preferred option, and failing that, a bottomless arch culvert.

5.2 Likely Crossing Method Proposed

5.2.1 Two watercourse crossings will be required to facilitate the Proposed Development. Based on the data obtained, the design of these crossings are likely to be in the form of bottomless box/arch culverts or a single-span bridge. These will be designed to have

sufficient capacity to comply with the one in 100 year plus climate change event including an allowance for partial blockage.

5.2.2 The two proposed watercourse crossings are summarised in **Table 5.1**.

Table 5.1 Summary of Watercourse Crossings

Watercourse Crossing	Top Width (m)	Depth (m)	Description	Likely Crossing Method*	Justification
PWC1	4.7	2.4	Nant Cwm-bach Ordinary Watercourse	Bottomless Box/Arch	Narrow channel size. Limited potential hydraulic or ecological impact.
PWC2	18.0	0.7	Unnamed Ordinary watercourse at Bryn-y-fro Farm	Single/Clear-span Bridge or Bottomless Box/Arch	Wide, shallow right bank with the watercourse channel not as defined. Minimise disturbance to bed and banks.
*indicative only at this stage, subject to detailed design					

5.2.3 If further watercourse crossing points are identified across field boundary ditches (Ordinary Watercourses), it is likely that these will be circular culverts due to the negligible potential hydraulic or ecological impact of the crossing.

5.2.4 The final design of any watercourse crossings will be agreed with NRW. Applications for a Land Drainage Consent will be made to the relevant Lead Local Flood Authority (LLFA), likely to be Bridgend County Borough Council, prior to construction.

6 SUMMARY

6.1.1 This report summarises the methodology employed to survey two watercourse crossing points required to facilitate the construction, operation and decommissioning of the Mynydd Ty-talwyn Energy Park.

6.1.2 By identifying the existing conditions recorded in this walkover survey, stakeholders can ensure the protection of watercourses, meet legislative requirements, and demonstrate a steadfast commitment to responsible and sustainable construction practices. Recommendations for the likely crossing types for the Proposed Development are set out in this report being a clear-span bridge as preference and failing that a bottomless arch culvert.

ANNEX A
WATERCOURSE CROSSING LOCATIONS

Legend

- Site Boundary
- Existing Mapped Ordinary Watercourses
- Track Layout
- Crossing Points

CRS: EPSG 27700
Projection: Transverse Mercator
Units: m

Rev	Date	Description	Drn	Chk	App
02	08/10/2025	Update to Draft	EW	CW	CW
01	26/03/2025	Update to Draft	EW	CW	CW
00	26/03/2025	First Draft	EW	CW	CW

Mynydd Ty-talwyn Energy Park

GALILEO EMPOWER

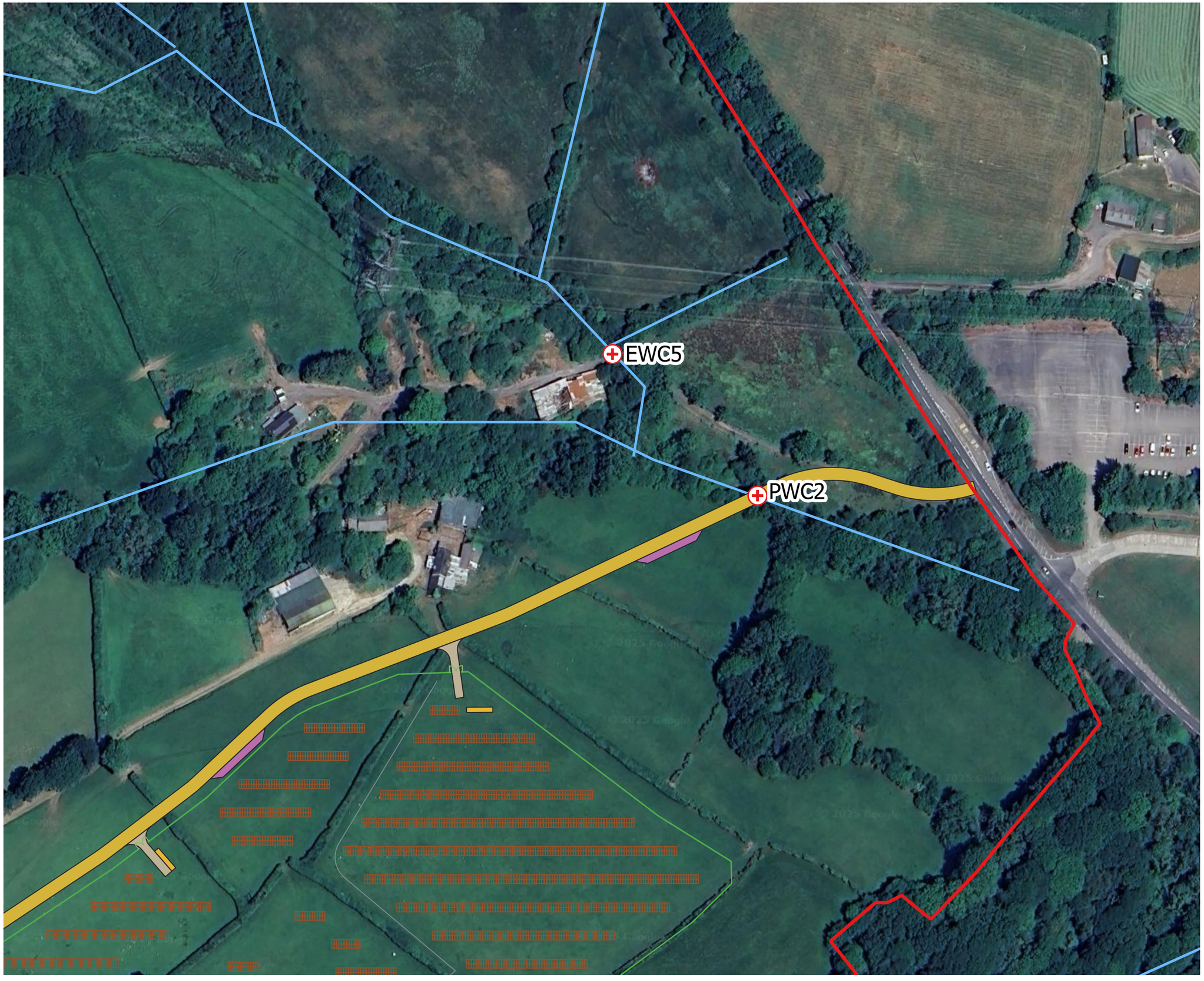
TITLE:
Annex A
Watercourse Crossing Locations
(Nant Cwm-bach)

ID:680985-00-F-HYD

0 25 50 m

Scale: 1:1,800 @A3

REV 02



Legend

- Site Boundary
- Existing Mapped Ordinary Watercourses
- Crossing Points
- Access Track
- Solar Parcel Fences
- Solar Panel Layout
- Temporary Solar Track
- Solar Track
- Solar Inverters-Transform
- CV Fences-Gates
- Northern Access Passing

CRS: EPSG 27700
Projection: Transverse Mercator
Units: m

Rev	Date	Description	Drn	Chk	App
02	10/10/2025	Update to Solar Layout	EW	CW	CW
01	08/10/2025	Update to Draft	EW	CW	CW
00	26/03/2025	First Draft	EW	CW	CW

Mynydd Ty-talwyn Energy Park

GALILEO EMPOWER

TITLE:

Annex A
Watercourse Crossing Locations
(Bryn-y-fro Farm)

ID:680985-00-F-HYD

0 25 50 m

Scale: 1:1,800 @A3

REV 02

ANNEX B
SITE NOTES, ANNOTATED LOCATION PLANS & PHOTOGRAPH LOG

Crossing Point Reference		PWC1	
Watercourse Name		Nant Cwm-bach	
Location		Cwm Risca Lane, Bridgend, CF32 0EH	
Grid Reference		288095 E, 184570 N	
Top Width (m)	**Base Width (m)**	**Depth (m)**	**Water (cm)**
ca. 4.7	ca. 2.6	ca. 2.4	ca. 20

Site Description

- Proposed crossing point over Nant Cwm-bach.
- Located directly west of Cwm Risca Lane of which was noted to be steep.
- Steep straight banks.
- Fast flowing but shallow water.
- Bed substrate comprised of larger rocks.

Site Photos

Photo 1: Looking at the bed of the proposed crossing point taken from the left bank.

Photo 2: Looking downstream at the proposed crossing point, taken from the left bank.

Photo 3: Pipe outfall assumed to be land drainage from the field to the east of Cwm Risca Lane.

Comments

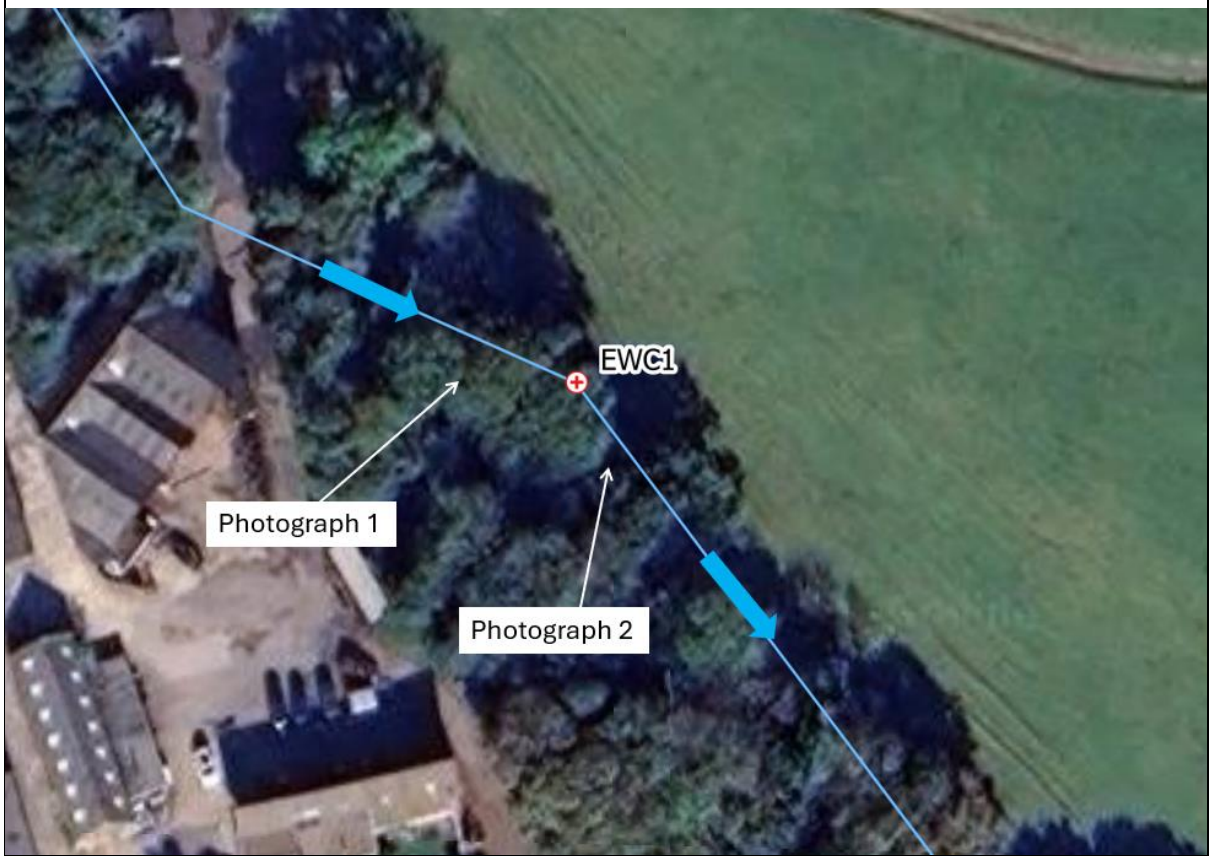
- Could only be accessed from left bank.
- Trees comprised much of the top of banks for both left and right bank.
- Land drainage outfalls in the vicinity of the surveyed location, notably from the field to the east of Cwm Risca Lane.

Location (Annotations)

<table>
<tr><td colspan="3"><u>Crossing Point Reference</u></td><td colspan="2">EWC1</td></tr>
<tr><td colspan="3">Watercourse Name</td><td colspan="2">Nant Cwm-bach</td></tr>
<tr><td colspan="3">Location</td><td colspan="2">Cwm Risca Farm, Bridgend, CF32 0EH</td></tr>
<tr><td colspan="3">Grid Reference</td><td colspan="2">288054 E, 184718 N</td></tr>
<tr><td>Top Width (m)</td><td>Base Width (m)</td><td>Depth (m)</td><td>Water (cm)</td></tr>
<tr><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td colspan="4">Site Description</td></tr>
<tr><td colspan="4">• Existing culvert crossing point over Nant Cwm-bach beneath Cwm Risca Lane and a lorry turning point.
• Located directly east of Cwm Risca Lane.
• Shallow beds.</td></tr>
<tr><td colspan="4">Site Photos</td></tr>
<tr><td colspan="3">  </td><td>Photo 1: Looking upstream towards the culverted outfall.</td></tr>
<tr><td colspan="3">  </td><td>Photo 2: Cwm Risca Lane and the lorry turning point which the crossing is assumed to be positioned beneath.</td></tr>
<tr><td colspan="4">Comments</td></tr>
<tr><td colspan="4">• Could not be accessed due to fencing (unable to be surveyed).</td></tr>
</table>

- Vegetation obstructed the view of the outfall so it was unclear as to what crossing type this was.

Location (Annotations)



Crossing Point Reference			EWC2	
Watercourse Name			Nant Cwm-bach	
Location			Cwm Risca Lane, Bridgend, CF32 0EH	
Grid Reference			288095 E, 184664 N	
	Top Width (m)	**Base Width (m)**	**Depth (m)**	**Water (cm)**
Upstream	ca. 0.9	ca. 0.9	ca. 0.5	ca. 7
Downstream	ca. 0.6	ca. 0.6	ca. 0.3	ca. 6

Site Description

- Existing culvert crossing point over Nant Cwm-bach beneath Cwm Risca Lane, directing the watercourse from the eastern side of the lane to the western side.
- Crossing consists of 2no. 250mm diameter circular culverts.
- Two drainage outfall pipes positioned to convey flow south-east discharge into the watercourse just before the crossing culvert inlets.

Site Photos

Photo 1: Upstream culvert inlet location. Two small outfall pipes observed to be discharging to the watercourse at this location.

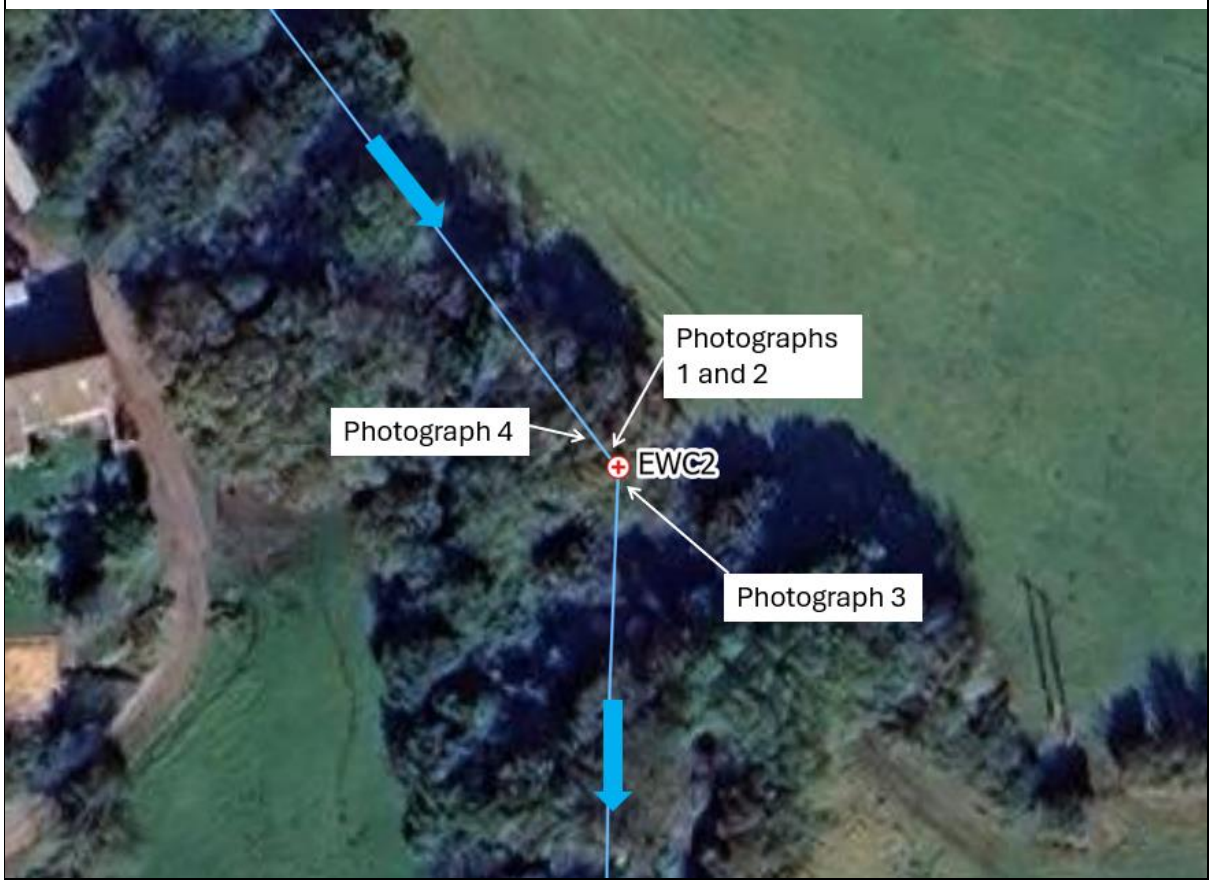
Photo 2: Looking upstream from the crossing point.

	Photo 3: A view of the downstream outlet of the double culverts.
	Photo 4: A manhole located on the eastern side of Cwm Risca Lane. Its positioning suggests it's potentially linked to the outfall pipes discharging to the upstream extent of the crossing.

Comments

- The road tarmac was observed to be damaged/eroded in the location above/adjacent to the downstream culvert outlet.
- Surface water was observed along Cwm Risca Lane, entering the watercourse at the location of the culvert crossing outlet.
- Culvert inlets observed to be partially blocked by leaf litter and tree branches.

Location (Annotations)


Photographs
1 and 2
Photograph 4
EWC2
Photograph 3

Crossing Point Reference		EWC3	
Watercourse Name		Nant Cwm-bach	
Location		Cwm Risca Lane, Bridgend, CF32 0EH	
Grid Reference		288093 E, 184557 N	
Top Width (m)	**Base Width (m)**	**Depth (m)**	**Water (cm)**
ca. 1.0	ca. 1.0	ca. 0.6	ca. 8

Site Description

- Existing culverted field access of Nant Cwm-bach.
- Crossing consists of 1no. 300mm diameter circular culvert.
- Water flowed fast and shallow through the culvert.
- Large rocks were observed as the bed substrate.
- The left back was observed to be very shallow with both banks being straight.

Site Photos

Photo 1: Upstream culvert inlet of crossing point.

Photo 2: Downstream culvert outlet of crossing point.

	Photo 3: Closer view of the downstream culvert outlet.
	Photo 4: Wider view of the existing field access crossing (looking from the downstream extent).
Comments	
• The upstream extent of the culvert was partially blocked by bracken and branches.	
Location (Annotations)	


PWC1
Photograph 1
EWC3
Photographs
2, 3 and 4

Crossing Point Reference		EWC4	
Watercourse Name		Nant Cwm-bach	
Location		Cwm Risca Lane, Bridgend, CF32 0EH	
Grid Reference		288105 E, 184497 N	
Top Width (m)	**Base Width (m)**	**Depth (m)**	**Water (cm)**
ca. 0.5	ca. 0.5	ca. 0.2	ca. 5

Site Description

- Existing culverted driveway access of Nant Cwm-bach for the property opposite Swn y Nant.
- Crossing consists of 1no. 300mm diameter circular culvert.
- Water flowed fast and shallow through the culvert.
- Large, slabbed rocks were observed as the bed substrate of the downstream extent.
- A boundary wall makes up the right bank of the watercourse with multiple outfall pipes on the downstream side discharging into the watercourse.

Site Photos

Photo 1: Upstream culvert inlet of crossing point.

Photo 2: Downstream culvert outlet of crossing point.

Photo 3: A view of the downstream extent of the watercourse from the location of the outlet.

Comments

- The owners of the property noted that during times of heavy rainfall, the culvert was approximately half full.
- The owners of the property noted that surface water runoff along Cwm Risca Lane enters into the watercourse at the downstream culvert outlet and forms a whirlpool within this area.

Location (Annotations)

Crossing Point Reference		PWC2	
Watercourse Name		Unnamed Ordinary Watercourse at Bryn Fo Farm	
Location		Bryn Fo Farm, Llangynwyd, Maesteg, CF34 9RS	
Grid Reference		287281 E, 187255 N	
Top Width (m)	**Base Width (m)**	**Depth (m)**	**Water (cm)**
ca. 18	ca. 0.9	ca. 0.7	ca. 4

Site Description

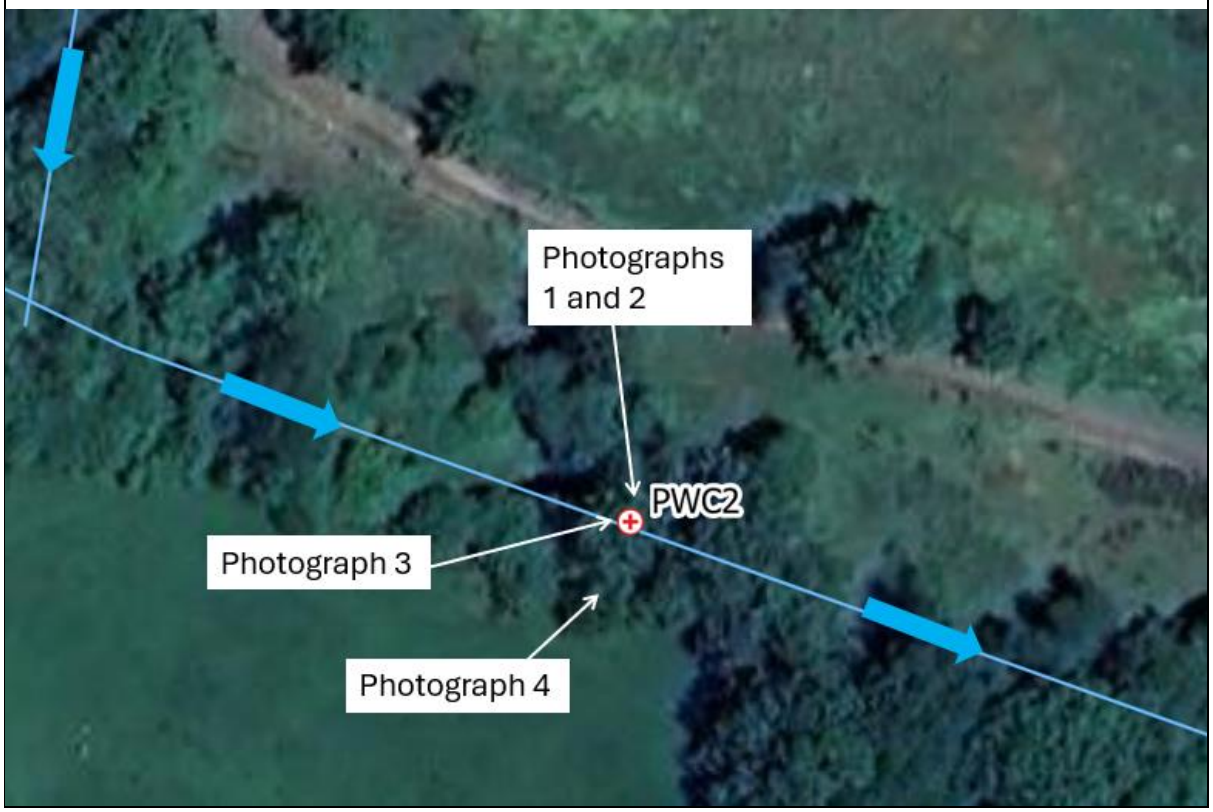
- Proposed crossing point over the unnamed Ordinary Watercourse.
- The left bank was steep and straight.
- The right bank was not defined and comprised the field to the west of the watercourse which had a gradual fall, creating a wider floodplain.
- Fast flowing water.
- Bed substrate comprised of a mix of larger and smaller pebbles and sand sediments.

Site Photos

Photo 1: Looking downstream across the proposed crossing point from the left bank.

Photo 2: Looking upstream at the proposed crossing point.

	Photo 3: Looking downstream at the proposed crossing point. Sandy sediments were observed on the right of the channel.
	Photo 4: A view across the proposed crossing point taken from the right bank.
Comments	
• The width of the watercourse was measured from the top of the left bank to the same elevation on the right bank. • The sand sediments on right-hand side of the bed indicated that the channel becomes wider during higher intensity rainfall events.	
Location (Annotations)	



Crossing Point Reference	EWC5

Watercourse Name			Unnamed Ordinary Watercourse at Bryn Fo Farm	
Location			Bryn Fo Farm, Llangynwyd, Maesteg, CF34 9RS	
Grid Reference			287214 E, 187321 N	
	Top Width (m)	**Base Width (m)**	**Depth (m)**	**Water (cm)**
Upstream	ca. 0.6	ca. 0.3	ca. 0.2	ca. 8
Downstream	ca. 0.8	ca. 0.6	ca. 0.4	ca. 7

Site Description

- Existing road crossing point beneath an unnamed Ordinary watercourse at Bryn Fo Farm.
- The crossing comprised 1no. 200mm diameter circular culvert.
- The bed became very wide in the location of the upstream culvert inlet with the width further upstream being significantly narrower.
- Bed substrate comprised of sandy, fine pebbles in the upstream extent with more coarse material downstream.

Site Photos

Photo 1: Looking upstream from the culvert inlet.

Photo 2: A view of the upstream culvert inlet as the bed becomes wider.

	Photo 3: A downstream view from the culvert outlet.
	Photo 4: A view of the downstream culvert outlet, looking upstream.
Comments	
• A dry ephemeral watercourse was observed to connect to the upstream extent of the watercourse.	
Location (Annotations)	


Photographs
1 and 2
EWC5
Photographs
3 and 4