Partners in UK offshore wind

MONA OFFSHORE WIND PROJECT

Geomorphology Clarification Note

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F01

Image of an offshore wind farm

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Prepared by:

RPS

Prepared for:

Mona Offshore Wind Ltd.

Contents

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Glossary

Term	Meaning
Applicant	Mona Offshore Wind Limited.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Project (NSIP).
Mona Offshore Wind Project	The Mona Offshore Wind Project is comprised of both the generation assets, offshore and onshore transmission assets, and associated activities.
Mona Onshore Cable Corridor	The corridor between MHWS at the landfall and the Mona onshore substation, in which the onshore export cables will be located.
Mona Onshore Development Area	The area in which the landfall, onshore cable corridor, onshore substation, mitigation areas, temporary construction facilities (such as access roads and construction compounds), and the connection to National Grid substation will be located
Pre-construction site investigation surveys	Pre-construction geophysical and/or geotechnical surveys undertaken offshore and, or onshore to inform, amongst other things, the final design of the Mona Offshore Wind Project.
Relevant Local Planning Authority	The Relevant Local Planning Authority is the Local Authority in respect of an area within which a project is situated, as set out in Section 173 of the Planning Act 2008. Relevant Local Planning Authorities may have responsibility for discharging requirements and some functions pursuant to the DCO, once made.
Statutory consultee	Organisations that are required to be consulted by an applicant pursuant to the Planning Act 2008 in relation to an application for development consent. Not all consultees will be statutory consultees (see non-statutory consultee definition).
The Planning Inspectorate	The agency responsible for operating the planning process for NSIPs.

Acronyms

Acronym	Description
CCBC	Conwy County Borough Council
CO	Cobble
DCA	Ditch Condition Assessment
DCC	Denbighshire County Council
GP	Gravel-pebble
HDD	Horizontal Directional Drilling
MoRPh	Modular River Survey
NNIPS	Non-native invasive plant species
NRW	Natural Resources Wales
SA	Sand
SI	Silt

Acronym	Description
WFD	Water Framework Directive

Units

Unit	Description
GW	Gigawatt
km	Kilometres
km^2	Kilometres squared
kV	Kilovolt
MW	Megawatt

1 Geomorphology Clarification Note

1.1 Introduction

1.1.1.1 This document has been prepared in response to comments raised by Natural Resources Wales (NRW) in point 3.2.7 Fluvial geomorphology elements of the Water Framework Directive (WFD) of their Relevant Representation(RR-011), which states that:

With the exception of being mentioned in the WFD assessment [APP-120] and partial related reference to impacts on habitats in the Onshore Ecology chapter [APP-066] section, the ES fails to specifically address fluvial geomorphology (the physical form and natural processes of rivers). Unlike other similar subjects (e.g. hydrology, flood risk, ecology, fisheries etc) there is no baseline fluvial geomorphology data (e.g. River Habitat Survey, MoRPh, Fluvial Audit), no impacts identified, no consideration of sensitivity of receptors, no significance of effect or cumulative impact of any of the proposed works with regard to fluvial geomorphology (e.g. open cut or trenchless crossings of watercourses, haul road bridges etc.). As stated in our previous response to the PEIR dated (1 June 2023 AOS-21167-0026) "More details of the geomorphological impacts associated with the proposals should be provided and suitable expertise sought." This position remains valid.

1.1.1.2 Conwy County Borough Council (CCBC) and Denbighshire County Council (DCC) also made the following comment regarding geomorphology characterisation in their Local Impact Report (REP1-048):

Evidence to support statements such as in paragraph 2.7.2.3 [in APP-063] *"For crossings of smaller watercourses (that are frequently dry) and drainage channels, open cut trenched techniques may be used" is important to ensure that the assessment has adequately considered potential effects relating to the watercourse crossings. The Councils request further baseline data provided in relation to fluvial geomorphology.*

1.1.1.3 The points above were also raised in the Statements of Common Ground (SoCG) with NRW (REP1-026), Denbighshire County Council (DCC) (REP3-060) and Conwy County Borough Council (CCBC) (REP3-061) and are being discussed through the SoCG process.

1.2 Response

1.2.1 Background

1.2.1.1 The construction of the Mona Onshore Cable Corridor will cross ten Ordinary Watercourses (as shown on Figure 1.1). Information on these watercourses was gathered during onshore ecology surveys undertaken as part of the environmental impact assessment process.

1.2.1.2 Potential impacts on watercourses as a result of the installation of the onshore export cable and the temporary haul road crossings are assessed in the following documents:

- Volume 7, Annex 2.4: Water Framework Directive Surface Water and Groundwater Assessment (APP-120)
- Volume 3, Chapter 2: Hydrology and Flood Risk (APP-065).

1.2.1.3 The Applicant considers that its assessment of the impacts to watercourses is proportionate given the nature of the hydrological receptors that will be crossed by the Mona Onshore Cable Corridor and the embedded design commitments.

1.2.2 Purpose of the document

1.2.2.1 The purpose of this geomorphology clarification note is to collate information from the Environmental Statement (and supplement with additional observations) for the benefit of NRW, DCC and CCBC. The note provides a description of the baseline geomorphology conditions of the watercourses that will be crossed by the Onshore Cable Corridor. The note will be used to inform further pre-construction surveys and the detailed design of the crossing methods. The detailed design for each crossing location will be provided in the onshore construction method statement that will be approved by the relevant authorities as part of the Code of Construction Practice under requirement 9.

1.2.2.2 Seven watercourses will be crossed using trenchless techniques (e.g. Horizontal Directional Drilling (HDD)), however in two locations, open cut trenching may be used as an alternative. One watercourse will not be crossed by the onshore cable corridor or the temporary haul road but will be diverted to accommodate the onshore substation. The type of crossing method for each watercourse location is identified in Volume 5, Annex 4.3: Onshore Crossing Schedule (REP1-007). Where trenchless techniques are used to install the onshore export cable, the watercourses will be crossed by a haul road within the Onshore Cable Corridor.

1.2.3 Overview of the watercourses

1.2.3.1 The locations of the watercourses that will be crossed by the Onshore Cable Corridor and described in the geomorphology clarification note are shown on Figure 1.1 and listed in the table below:

Table 1.1:Watercourses and Crossing Types

Watercourse Reference	Watercourse Name	Crossing Schedule (RE1-007) Mapping ID	Crossing Type	Haul Road Crossing
Location A	Nant y Fedw (292510, 375826	47	Trenchless techniques	Existing crossing
Location B	Nant y Fedw (292946, 375018);	62	Trenchless techniques	New haul road crossing
Location C	Unnamed agricultural ditch (293810, 373809);	92	Trenched/trenchless techniques	New haul road crossing
Location D	Seepage draining to Afon Gele (294108, 373782);	109	Trenchless techniques	New haul road crossing
Location E	Tributary of Afon Gele 3 (294187, 373681);	110	Trenchless techniques	New haul road crossing
Location F	Seepage draining to Afon Gele (294684, 373558);	120	Trenchless techniques	New haul road crossing
Location G	Tributary of Nant y Greigiau (295911, 373731)	102/103	Trenchless techniques	New haul road crossing

Watercourse Reference	Watercourse Name	Crossing Schedule (RE1-007) Mapping ID	Crossing Type	Haul Road Crossing
Location H	Tributary of Nant Luke (296919, 374052);	172	Trenchless techniques	Existing crossing
Location I	Tributary of Nant-y-Faenol (301435, 373293);	259	Trenched/trenchless techniques	New haul road crossing
Location J	Unnamed ditch (301769, 373082	N/A (not crossed by onshore cable corridor)	Watercourse diversion	Not required

1.2.4 Methodology

Overview

1.2.4.1 In order to provide up to date photograph and consistent baseline information for each location, a site walkover was undertaken on 2 and 3 October 2024 by two RCA (River Condition Assessment) accredited consultants. The Modular River Survey (MoRPh) methodology (Gurnell *et al*., 2020) was followed unless the watercourses were not suitable for a MoRPh survey. The following approach was applied:

- Where the watercourses were large enough to be morphologically active, a MoRPh survey was undertaken at a single crossing point.
- Where the watercourses fitted the criteria for a Ditch Condition Assessment (DCA) (Department for Environment, Food and Rural Affairs, 2024) this was undertaken instead of a MoRPh survey.
- Where watercourses were not large enough to be morphologically active and could not be classified as a drainage ditch, a visual survey was undertaken.

MoRPh Survey

1.2.4.2 The MoRPh survey methodology typically comprises five contiguous MoRPh surveys to collect field data within the sub-reaches of a river (the MoRPh5). Due to the scale of the crossings and nature of the work proposed for the Mona Offshore Wind Project, a single MoRPh survey was undertaken at the crossing location.

1.2.4.3 In line with the MoRPh survey methodology, the survey included land within 10m of each bank top either side of the watercourse, both bank faces and the channel bed. The features captured within the survey include the sediments on the channel bank and bed, morphological and hydraulic features/habitats, riparian and aquatic vegetation including the presence and extent of non-native invasive plant species (NNIPS), bank top land use and human interventions within the river channel.

1.2.4.4 The MoRPh survey classifies the watercourse into one of thirteen natural river types. The illustration of the different river types from Gurnell *et. al* is provided in Appendix A1.

Ditch Condition Assessment

1.2.4.5 The DCA follows a standard proforma from Natural England and applies to agricultural drainage ditches or field drains that are artificial and straightened in nature.

1.2.4.6 The DCA comprises eight criteria pertaining to water quality, aquatic and marginal vegetation, algae, evidence of physical damage, water levels, channel shading and NNIPS (presence of invasive species).

1.2.4.7 Based on the number of criteria met, the ditch is provided a classification either ‘Good’, ‘Moderate’ or ‘Poor’.

Limitations

1.2.4.8 Due to site access restrictions at the time of site walkover, Location I and Location J were not accessible in October 2024, observations have been included from previous ecological surveys but no photographs are included within this document for these locations.

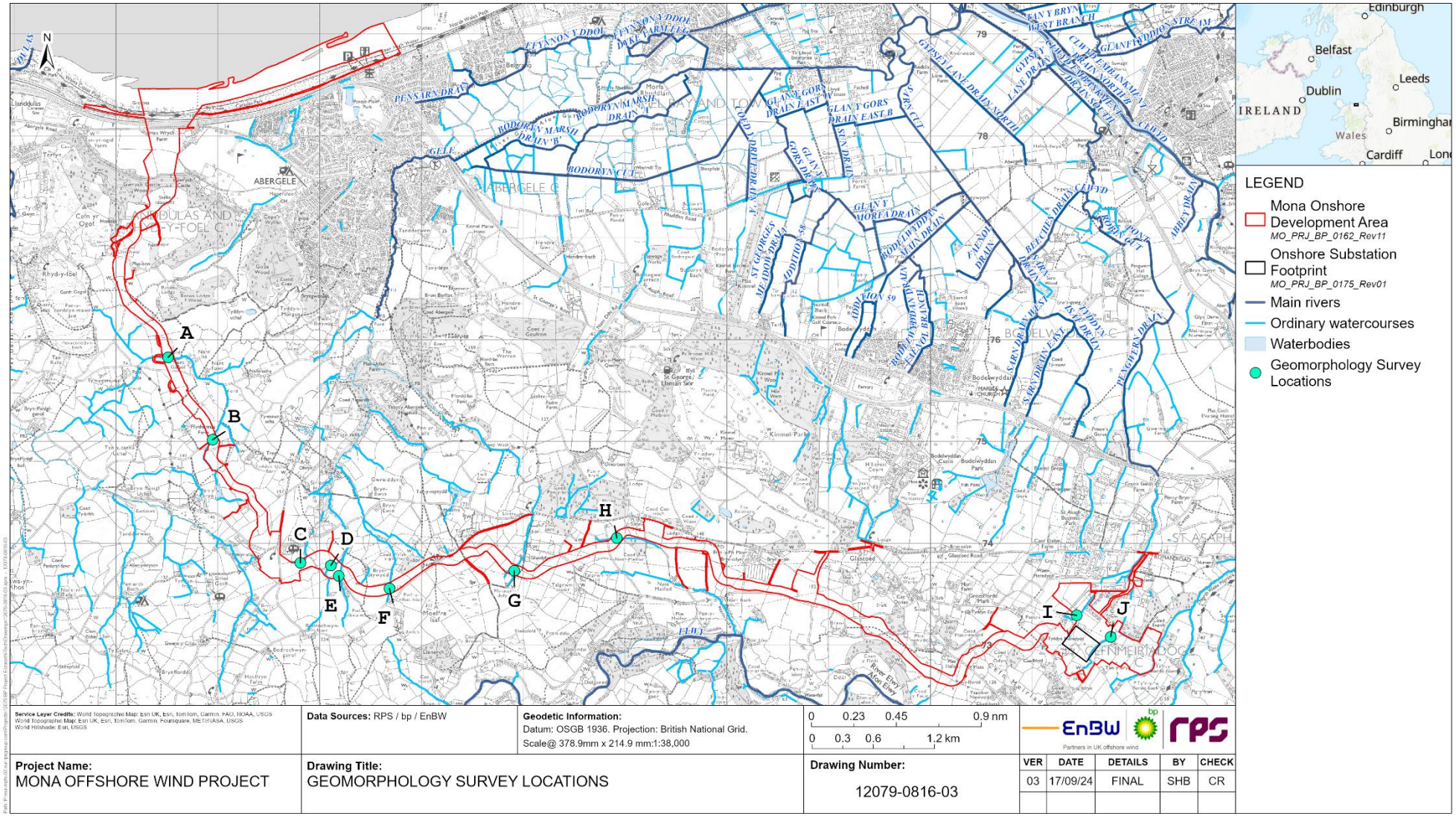


Figure 1.1: Geomorphology survey locations

1.2.5 Results

Overview

1.2.5.1 The following survey methodologies were applied to each watercourse:

Watercourse Reference	Survey Type
Location A	MoRPh Survey
Location B	MoRPh Survey
Location C	Ditch Condition Assessment
Location D	Visual Survey
Location E	MoRPh Survey
Location F	Visual Survey
Location G	MoRPh Survey
Location H	MoRPh Survey
Location I	Not surveyed
Location J	Not surveyed

Location A – Nant y Fedw

1.2.5.2 Location A was surveyed from the left bank, the right bank top was not accessible. It is a well-established and morphologically active stretch of the Nant y Fedw watercourse with a catchment area of 1.7km^2. The classification of this watercourse is River Type H – straight/sinuous, coarsest GP (gravel-pebble), average SA (sand).

1.2.5.3 Cover on both bank tops was classified as permanently vegetated agriculture. Saplings and trees were present extensively on the left bank top which offered extensive channel shading. There was large wood noted on the left bank face and channel bed, and leaning trees on the left bank face. The watercourse at this location exhibited limited artificial stresses: the right bank appeared to constitute a cliff feature made up of Earth. The condition of the right bank could be improved with the establishment of a riparian buffer.

1.2.5.4 The stretch of watercourse has a moderate richness of morphological features with a variety of bed sediment and flow types. Unvegetated side bars and a bench were identified in the channel margins and no artificial reinforcements were identified to be present. No NNIPS (Non-Native Invasive Plants) were observed at the time of walkover.

1.2.5.5 At this location the watercourse will be crossed using trenchless techniques and the haul road will use an existing crossing location as shown in Plate 1 below.

Plate 1: Approximate location of existing access track at Location A

Location B – Nant y Fedw

1.2.5.6 Location B was located approximately 1.3km upstream of location A and has a catchment area of 0.2km^2. Cattle were present in the land parcel associated with the left bank therefore, the survey was undertaken from the right bank. The classification of this watercourse is River Type K – straight/sinuous, coarsest SA, average SI (silt).

1.2.5.7 The observations noted that sections of the Nant y Fedw had running water, however at the location of the proposed crossing, the water appeared stagnant and eutrophic with no perceptible flow and choked with aquatic plants. Vegetation at the channel margin included mosses, emergent broad leaves and linear leaves in addition to free floating plants. The presence of Duckweed (*Lemnoideae*) was extensive in the channel. Large wood was also noted in the channel, right bank top and right bank face.

1.2.5.8 The ground cover on the top of both of the bank was classified as permanently vegetated agriculture with areas of exposed soils and short grasses. The left bank appeared heavily poached by the cattle. The watercourse was boarded with scrub/shrubs on the right bank. The channel lacks almost any morphological richness and is generally in poor condition. A marginal backwater, which is an embayment feature with lowered flow velocities was identified along the left bank channel margin. No artificial reinforcements were evident. No NNIPS (Non-Native Invasive Plants) were observed at the time of walkover.

1.2.5.9 At this location the watercourse will be crossed using trenchless techniques and the haul road will require a new temporary crossing to be constructed.

Location C – Drainage ditch

1.2.5.10 Location C is an unnamed agricultural drainage ditch with a catchment area of 0.1km^2. was undertaken using the DCA methodology.

1.2.5.11 The completed DCA proforma for Location C is included below.

Table 1.2: Location C Ditch Condition Assessment

Condition Assessment Criteria	Criterion Passed (Yes or No)	Notes
The ditch is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution.	Yes	Clear water evident.
A range of emergent, submerged and floating-leaved plants are present. As a guide >10 species of emergent, floating or submerged plants present in a 20 m ditch length.	Yes	Lots of species present in channel and along margins and bank face.
There is less than 10% cover of filamentous algae and or duckweed *Lemna* spp. (these are signs of eutrophication).	Yes	No signs of eutrophication present.
A fringe of aquatic marginal vegetation is present along more than 75% of the ditch.	Yes	Marginal vegetation along more than 75%.
Physical damage is evident along less than 5% of the ditch, with examples of damage including: excessive poaching, damage from machinery use or storage, or any other damaging management activities.	Yes	No physical damage identified.
Sufficient water levels are maintained - as a guide a minimum summer depth of approximately 50 cm in minor ditches and 1 m in main drains.	No	Less than 50cm water identified in October 2024.
Less than 10% of the ditch is heavily shaded.	Yes	Ditch is shaded by vegetation on bank top, within the channel and bank face.
There is an absence of non-native plant and animal species.	Yes	No NNIPS identified.

1.2.5.12 Overall, based on the criterion above, the watercourse at Location C achieved a 'Moderate' (2) score on the DCA.

1.2.5.13 The condition of the ditch could be improved by maintaining sufficient water levels in the ditch of at least 50cm.

1.2.5.14 At this location the watercourse will be crossed using trenched or trenchless techniques and the haul road will require a new temporary crossing to be constructed.

Location D

1.2.5.15 Location D comprises a seepage draining to Afon Gele with a catchment area of 0.2km^2. The watercourse is not suitable for a MoRPh survey as there is insufficient flow to support morphological activity; it is also not suitable for a ditch condition assessment.

1.2.5.16 The seepage appeared to be generally in good condition with no noticeable turbidity or signs of pollution. There were also no signs of stress from agricultural activity such as grazing. No NNIPS were observed at the time of walkover.

1.2.5.17 At this location the watercourse will be crossed using trenchless techniques and the haul road will require a new temporary crossing to be constructed.

Location E – Afon Gele

1.2.5.18 The survey at Location E was undertaken from both banks. This stretch of the Afon Gele has a catchment area of 0.4km^2. The classification of this watercourse is River Type H – straight/sinuous, coarsest GP, average SA.

1.2.5.19 The ground cover on the top of both banks was classified as permanently vegetated agriculture constituting extensive short grasses and tall grasses with minor areas of shrubbery on the right bank. In addition to this, the right bank face had trees that were leaning and J-shaped with some exposed tree roots. At the channel margin, mosses were identified, alongside emergent linear leaved vegetation. While the surrounding land is used for pasture, there was no evidence of poaching and the tree/shrub cover forms a partial riparian buffer.

1.2.5.20 The surveyed stretch is in good general condition, with a good richness of channel morphologies, flow types and bed materials. The channel bed included a chute feature, with water moving downstream primarily in unbroken and broken standing waves with areas of ripples and one riffle. The majority of the channel bed was unvegetated, with a vegetated mid channel bar and trace emergent broad leaves, emergent linear leaves and free-floating vegetation present. There was one fallen tree in the channel at time of survey.

1.2.5.21 No artificial reinforcements were evident. No NNIPS were observed at the time of the walkover.

1.2.5.22 At this location the watercourse will be crossed using trenchless techniques and the haul road will require a new temporary crossing to be constructed.

Location F - Seepage

1.2.5.23 Location F comprises unnamed seepage located 520m to the west of Afon Gele and appeared to drain to the adjacent catchment. The watercourse is not suitable for a MoRPh survey as there is insufficient flow to support morphological activity; it is also not suitable for a ditch condition assessment.

1.2.5.24 The seepage appeared to be generally in good condition with no noticeable turbidity or signs of pollution. There were also no signs of stress from agricultural activity such as grazing. No NNIPS were observed at the time of walkover.

1.2.5.25 At this location the watercourse will be crossed using trenchless techniques and the haul road will require a new temporary crossing to be constructed.

Location G – Nant y Greigiau

1.2.5.26 Observations of Location G were undertaken from the right bank, the left bank top was not accessible nor visible through vegetation and foliage. Location G comprises a very small upland watercourse which feeds into Nant y Greigiau downstream. It has a catchment area of 0.2km^2. The classification of this watercourse is River Type K – straight/sinuous, coarsest SA, average SI.

1.2.5.27 The right bank top was extensively covered by short grasses and tall grasses. There was a dense tree and shrubbery line on the left bank top and left channel margin. This constituted some large wood on the channel margins and extensive branches trailing into the channel. There was heavy vegetation within the channel with emergent linear leaved plants and tall herbs/grasses choking the channel.

1.2.5.28 There was almost no morphological richness of the channel bed and marginal features due to the small size of the watercourse, however there was some variety in terms of flow types. The watercourse had good connectivity to the floodplain (particularly given the size of the watercourse) and there is little evidence of stress from the surrounding pasture.

1.2.5.29 No artificial reinforcements were evident. No NNIPS were observed at the time of survey.

1.2.5.30 At this location the watercourse will be crossed using trenchless techniques and the haul road will require a new temporary crossing to be constructed.

Location H – Nant Luke

1.2.5.31 The Location H survey was undertaken from both banks. Location H comprises a small watercourse which drains into Nant Luke and has a catchment area of 0.3km^2. The classification of this watercourse is River Type F – straight/sinuous, coarsest CO (cobble), average GP.

1.2.5.32 Both bank tops had a dominant ground cover of permanently vegetated agriculture, but the left bank also had an unvegetated mud path/road present. Saplings and trees were present extensively on both bank faces, with a leaning trees and branches trailing into the channel on the right bank only. Other vegetation on the bank face included short grasses and tall grasses, with shrubs/scrub noted on the right bank face only. Emergent linear leaved plants were also present at the right channel bank face.

1.2.5.33 Channel vegetation included trace amounts of emergent broad leaved and emergent linear leaves, but the channel was not considered to be choked with aquatic vegetation. There was significant channel shading from trees.

1.2.5.34 The channel displayed some richness of bed and marginal morphological features and more than one flow type. Its condition is generally moderate. There is little evidence of stress from agricultural land use. The channel appeared slightly over-deepened and confined on both sides meaning that floodplain connectivity is poor.

1.2.5.35 No artificial reinforcements were evident. No NNIPS were observed at the time of survey.

1.2.5.36 At this location the watercourse will be crossed using trenchless techniques and the haul road will use an existing crossing location.

Location I

1.2.5.37 Location I was not surveyed in October 2024. Observations from previous ecological surveys indicate that under the MoRPh methodology a DCA would be the most suitable survey methodology in this area.

1.2.5.38 At this location the watercourse will be crossed using trenched or trenchless techniques and the haul road will require a new temporary crossing to be constructed.

1.2.5.39 An updated MoRPh survey will be undertaken post-consent to inform the detailed design of this crossing.

Location J

1.2.5.40 Location J was not surveyed in October. Observations from previous ecological surveys indicate that under the MoRPh methodology a DCA would be the most suitable survey methodology in this area.

1.2.5.41 In this location the watercourse will be diverted to accommodate the onshore substation platform. This diversion will be designed in accordance with the parameters set out in the Outline Operational Drainage Management Strategy (J27).

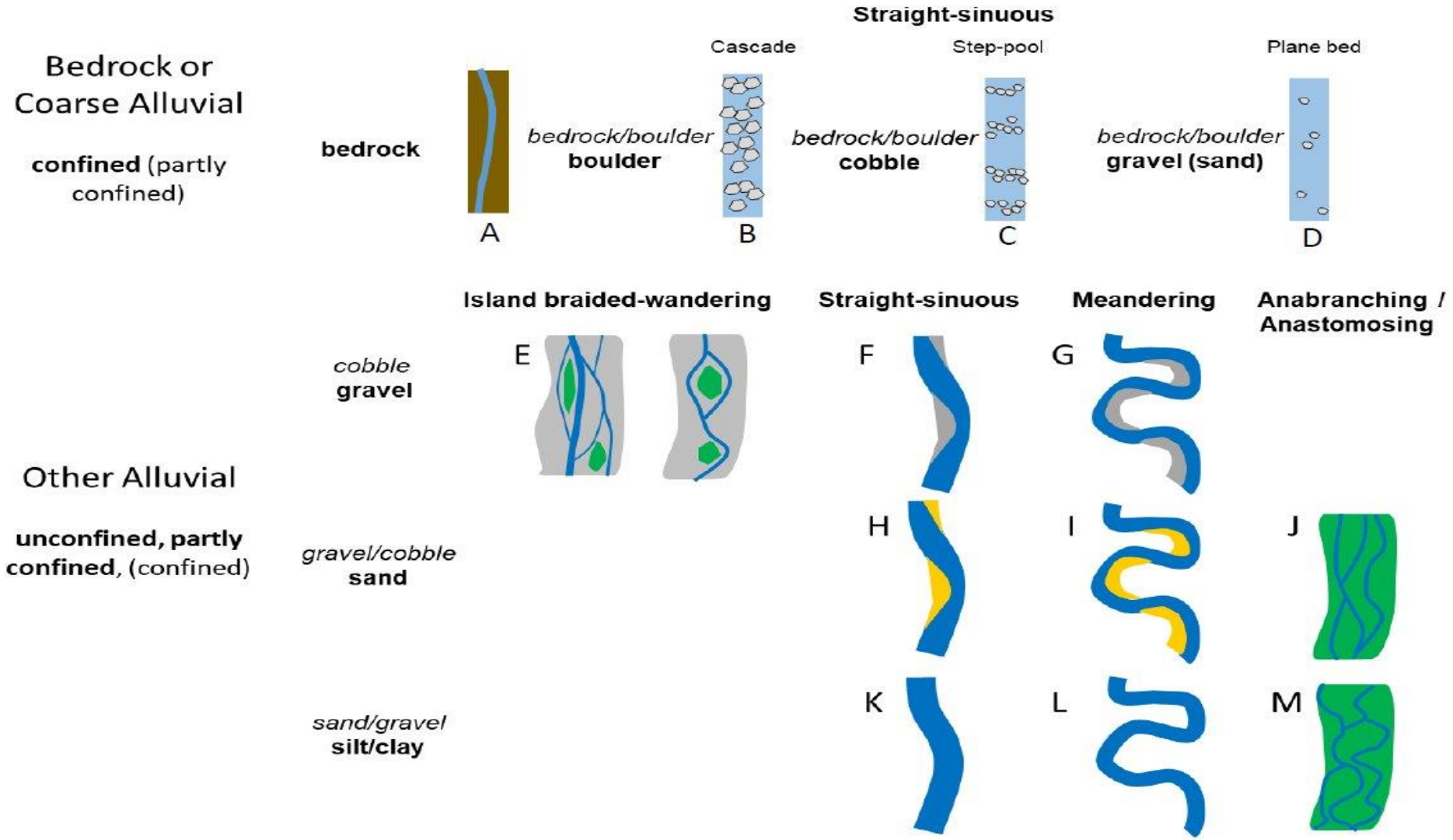
1.2.5.42 An updated MoRPh survey will be undertaken post-consent to inform the detailed design of the watercourse diversion.

1.3 References

Gurnell, A.M., Scott, S.J., England, J., Gurnell, D., Jeffries, R., Shuker, L. and Wharton, G., 2020. Assessing river condition: A multiscale approach designed for operational application in the context of biodiversity net gain. River Research and Applications, 36(8)

Department for Environment Food & Rural Affairs (2024) *The Statutory Biodiversity Metric User Guide (https://assets.publishing.service.gov.uk/media/65c60e0514b83c000ca715f3/The_Statutory_Biodiversity_Metric_-_User_Guide_.pdf)*

A.1. Illustration of River Types



A.2. MoRPh Indices

Index	Note	Scoring
Index 1: Number of Flow Types	The number of flow types recorded as Present or Extensive	Total flow types is 10, but only 9 are mutually compatible and thus the maximum number feasible, probable maximum is 6
Index 2: Highest Energy Present/Extensive Flow Type	The highest energy flow type recorded as Present or Extensive	
Index 3: Number of Bed Materials	Number of channel bed natural materials sediment types	The number of types that are Present or Extensive – possible maximum is 9, probable maximum is 6
Index 4: Coarsest Present/Extensive Bed Material Type	Excluding, organic and peat, the coarsest bed material recorded as Present or Extensive	
Index 5: Average Alluvial Bed Material Size	Observations of the following 6 bed material sizes: Boulder, Cobble, Gravel-pebble, Sand, Silt, Clay.	For each record the abundance as 2 for Trace, 19 for Present, 67 for Extensive
Index 6: Average Alluvial Bed Material Size Class	Average Alluvial Bed Material Size	Expressed in Phi units
Index 7: Extent of Superficial Bed Siltation	Extent of thin silt cover on the channel bed	Maximum score of 10 for the most extensive silt cover
Index 8: Channel Physical Habitat Complexity	Weighted average of the diversity of channel bed material types, water surface flow types, natural bed features and vegetation interacting with the channel	Ranges from 1 (minimal complexity) to 10 (extremely high complexity)
Index 9: Number of Aquatic Vegetation Morphotypes	Number of aquatic vegetation types that are present	Score 1 each for every plant morphotype that is P or E (maximum 10 types, ranging from liverworts/mosses/lichens to filamentous algae)
Index 10: Riparian Physical Habitat Complexity	Number and extent of riparian physical habitats found within the survey site, accumulating those related to wood, water-related features on	The index value ranges from 0 (extremely low complexity) to 10 (extremely high riparian physical habitat complexity across both banks)

Index	Note	Scoring
	the bank top, physical features on the bank face and water's edge, and natural bank profiles	
Index 11: Riparian Vegetation Structural Complexity	The number of riparian vegetation morphotypes found with an abundance of Present or Extensive within the survey site.	The maximum possible and probable score is 10
Index 12: Degree of Human Pressure Imposed by Bank Top Land Cover	The degree of human pressure imposed by land cover on the bank tops	Ranging from 0 (minimal modification/pressure) to 10 (high modification/pressure)
Index 13: Channel Reinforcement	the extent and strength of reinforcement of the river banks and bed	Ranges from 0 (no reinforcement) to 10 (fully reinforced with CC, CB, BR or SP)
Index 14: Non-native Invasive Plant Species Extent	The number and extent of invasion by the 4 most common non-native invasive plants along British rivers	Ranges from 0 (no nuisance plants) through 5 (extensive invasion) to approximately 10 (extensive and diverse invasion)
Himalayan Balsam	Extent of Himilayan Balsam in the channel, bed face, and bank top	Extensive/Present/Trace/Absent
Japanese Knotweed	Extent of Japanese Knotweed in the channel, bed face, and bank top	Extensive/Present/Trace/Absent
Giant Hogweed	Extent of Giant Hogweed in the channel, bed face, and bank top	Extensive/Present/Trace/Absent
Floating Pennywort	Extent of Floating Pennywort in the channel, bed face, and bank top	Extensive/Present/Trace/Absent

A.3. Tabulated MoRPh Data

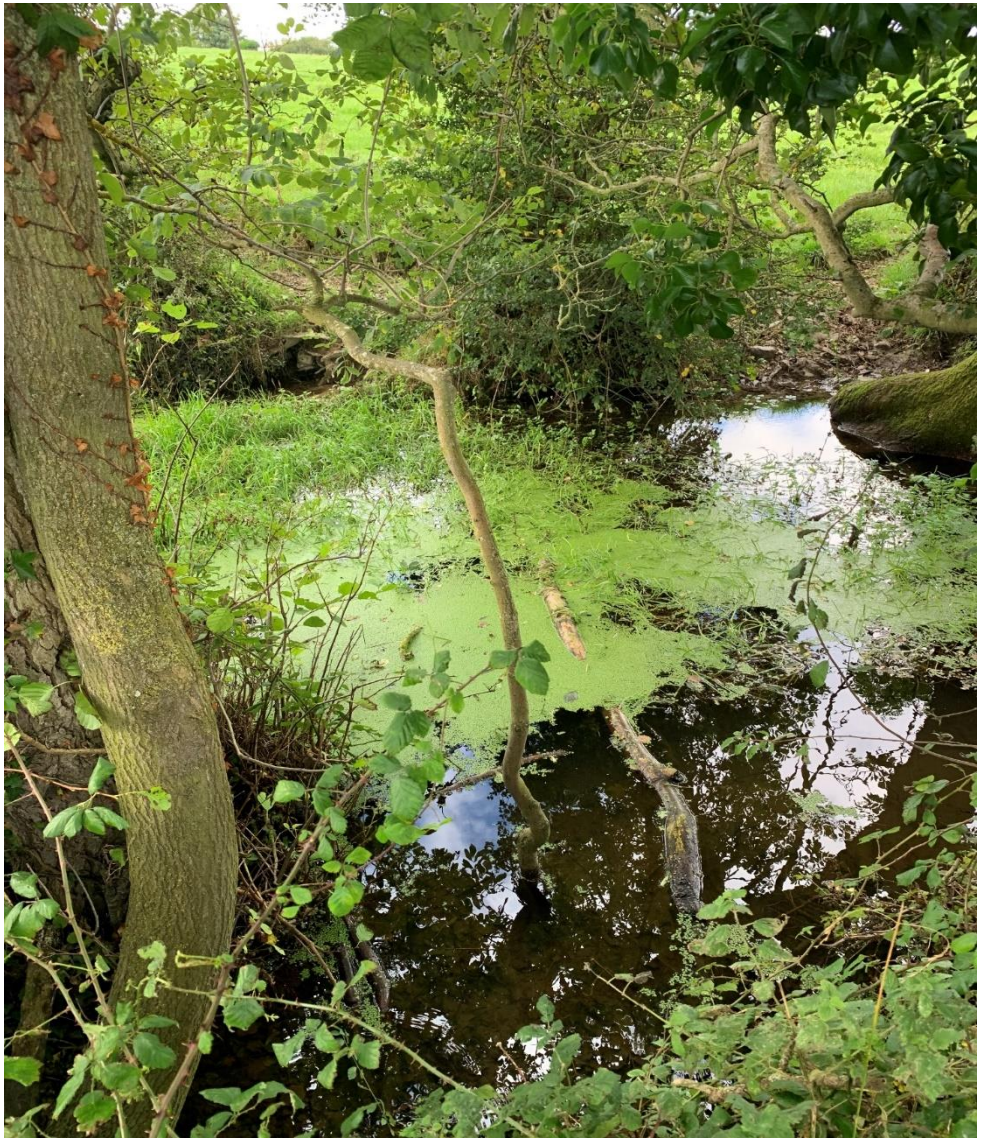
Location Reference	A	B	E	G	H
National Grid Reference	SH 92510 75825	SH 92947 75017	SH 94197 73713	SH 95921 73695	SH 96923 74056
River Name	Nant Y Fedw	Nant Y Fedw	Afon Gele	Nant y Greigiau	Nant Luke
WFD Waterbody ID	GB110066059830	GB110066059830	GB110066059980	GB110066059980	GB110066060020
Index 1: Number of Flow Types	1	1	3	3	2
Index 2: Highest Energy Present/Extensive Flow Type	UW	NP	CH	CH	CH
Index 3: Number of Bed Materials	4	2	3	2	4
Index 4: Coarsest Present/Extensive Bed Material Type	CO	CL	GP	CL	CO
Index 5: Average Alluvial Bed Material Size	1	10	4	10	-4
Index 6: Average Alluvial Bed Material Size Class	SA	CL	SA	CL	GP
Index 7: Extent of Superficial Bed Siltation	0	0	0	0	0
Index 8: Channel Physical Habitat Complexity	4	3	5	3	3
Index 9: Number of Aquatic Vegetation Morphotypes	1	2	1	1	1
Index 10: Riparian Physical Habitat Complexity	4	3	3	2	2
Index 11: Riparian Vegetation Structural Complexity	4	5	5	6	5
Index 12: Degree of Human Pressure Imposed by Bank Top Land Cover	1	1	1	1	4

Location Reference	A	B	E	G	H
National Grid Reference	SH 92510 75825	SH 92947 75017	SH 94197 73713	SH 95921 73695	SH 96923 74056
River Name	Nant Y Fedw	Nant Y Fedw	Afon Gele	Nant y Greigiau	Nant Luke
WFD Waterbody ID	GB110066059830	GB110066059830	GB110066059980	GB110066059980	GB110066060020
Index 13: Channel Reinforcement	0	0	0	0	0
Index 14: Non-native Invasive Plant Species Extent	0	0	0	0	0
Himalayan Balsam Extent	A	A	A	A	A
Japanese Knotweed	A	A	A	A	A
Giant Hogweed Extent	A	A	A	A	A
Floating Pennywort Extent	A	A	A	A	A

A.4. Site Photos

A.4.1 Location A

A.4.2 Location B



A.4.3 Location C

A.4.4 Location D

A.4.5 Location E

A.4.6 Location F

A.4.7 Location G

A.4.8 Location H