

Stage 1: Appropriate Assessment - Screening and Stage 2: Natura Impact Statement

Ardcahan Quarry

at

Dunmanway, Co. Cork

On behalf of

**McCutcheon Halley Chartered
Planning Consultants**



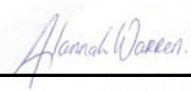


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**Stage 1: Appropriate Assessment - Screening and Stage 2: Natura Impact
Statement
Ardcahan Quarry
McCutcheon Halley Chartered Planning Consultants
Dunmanway, Co. Cork**

Contents

1	INTRODUCTION	5
1.1	Background	6
1.2	The Applicant.....	6
1.3	Site Context	7
1.3.1	Hydrology.....	8
1.3.2	Watercourses within the vicinity of the Site	12
1.3.3	Drainage Ditch Network	14
1.4	Statement of Authority.....	14
1.5	Regulatory Context	14
1.6	Stages of Appropriate Assessment.....	16
2	METHODOLOGY	17
2.1	Determining Zone of Influence.....	17
2.1.1	Source-Pathway-Receptor Model	17
2.2	Desk-Based Review	18
2.3	Consultation	18
2.4	Field-Based Studies	18
2.4.1	Habitat Survey	18
2.4.2	Aquatic Species.....	19
2.4.3	Invasive Species.....	19
2.4.4	Other Species	19
2.5	Survey Conditions and Limitations	19
3	DESCRIPTION OF THE PROPOSED DEVELOPMENT	20
3.1	Scale of Development	20
3.2	Development Phasing	20

3.3	Construction Activity	20
3.4	Operational Phase	21
3.4.1	Quarrying Process	21
3.4.2	Phasing Strategy for Extraction	21
3.4.3	Water Management	22
3.4.4	Access	25
3.4.5	Staff and Hours of Operation	25
3.4.6	Decommissioning and Remediation	25
3.4.7	Drainage	25
3.5	Decommissioning / Remediation Phase	28
3.6	Monitoring	28
3.6.1	Biodiversity	28
3.6.2	Water	29
3.6.3	Dust	29
4	IDENTIFICATION OF EUROPEAN SITES	30
4.1	Hydrological Connection	31
4.2	Identification of European Sites within Zol	32
4.2.1	Habitat Loss / Degradation	32
4.2.2	Water Quality Impairment	32
4.2.3	Air Quality Impairment	32
4.2.4	Noise / Disturbance	33
4.2.5	Invasive Species	34
4.3	Zol Conclusions	34
4.4	Bandon River SAC (Site Code: 002171)	35
4.5	Conservation Objectives	36
5	STUDY RESULTS	37
5.1	Desk-Based Study Results	37
5.1.1	NBDC Records	37
5.1.2	Irish Wetland Bird Survey ('I-WeBS') Records	37
5.2	Field-Based Study Results	37
5.2.1	Habitat Assessment	37
5.2.2	Habitats Recorded within the Land Holding	41
5.2.3	Species	43

6	STAGE 1 SCREENING: IDENTIFICATION OF POTENTIAL SIGNIFICANT IMPACTS	44
6.1	Potential Significant Impacts	44
6.2	Stage 1 – Analysis of ‘In-Combination’ Effects	48
6.3	Stage 1 – AA Screening Conclusion	49
7	STAGE 2 NIS	51
7.1	Assessment of Potential Significant Effects	51
7.1.1	Loss of or Disturbance to Designated Habitats during the Construction, Operational and Decommissioning / Remediation Phases	51
7.1.2	Potential Impairment of Air Quality during the Construction, Operational and Decommissioning / Remediation Phases	51
7.1.3	Potential Impairment of Water Quality during the Construction, Operational and Decommissioning / Remediation Phases	52
7.1.4	Potential Adverse Effects Associated with the Unintentional Spread of Japanese Knotweed	56
7.2	Stage 2 - Analysis of ‘In-Combination’ Effects	58
8	NIS CONCLUSIONS AND STATEMENT	59
9	REFERENCES	60

FIGURES

Figure 1-1:	Site Location	5
Figure 1-2:	Site Context and Overview	8
Figure 1-3:	Locations of Waterbodies on-site	12
Figure 1-4:	Watercourses in the Vicinity of the Site	14
Figure 3-1:	Proposed Extraction Area Phasing	22
Figure 3-2:	Proposed Wash Plant	24
Figure 4-1:	Site Location and European Sites within 15km	30
Figure 4-2:	Hydrological connection between the Site and Bandon River SAC	31
Figure 5-1:	Habitat Map	42

TABLES

Table 1-1:	Relevant Planning Application History	6
Table 1-2:	Summary of On-Site Surface Water Catchments	10
Table 3-1:	Indicative Phasing Strategy for Extraction	22
Table 4-1:	European Sites within 15km of the Site	31
Table 4-2:	European Sites within Zol	35

Table 4-3: Qualifying Annex I Habitats for the Bandon River SAC.....	35
Table 4-4: Qualifying Annex II Species for the Bandon River SAC	35
Table 6-1: Screening Assessment: Annex I Habitats – Bandon River SAC	45
Table 6-2: Screening Assessment: Annex II Species for the Bandon River SAC.....	46

Appendices

Appendix A – Freshwater Pearl Mussel Report

Appendix B – Hydro Layout

Appendix C – Japanese Knotweed Management Plan

Appendix D – Remediation Plan

1 INTRODUCTION

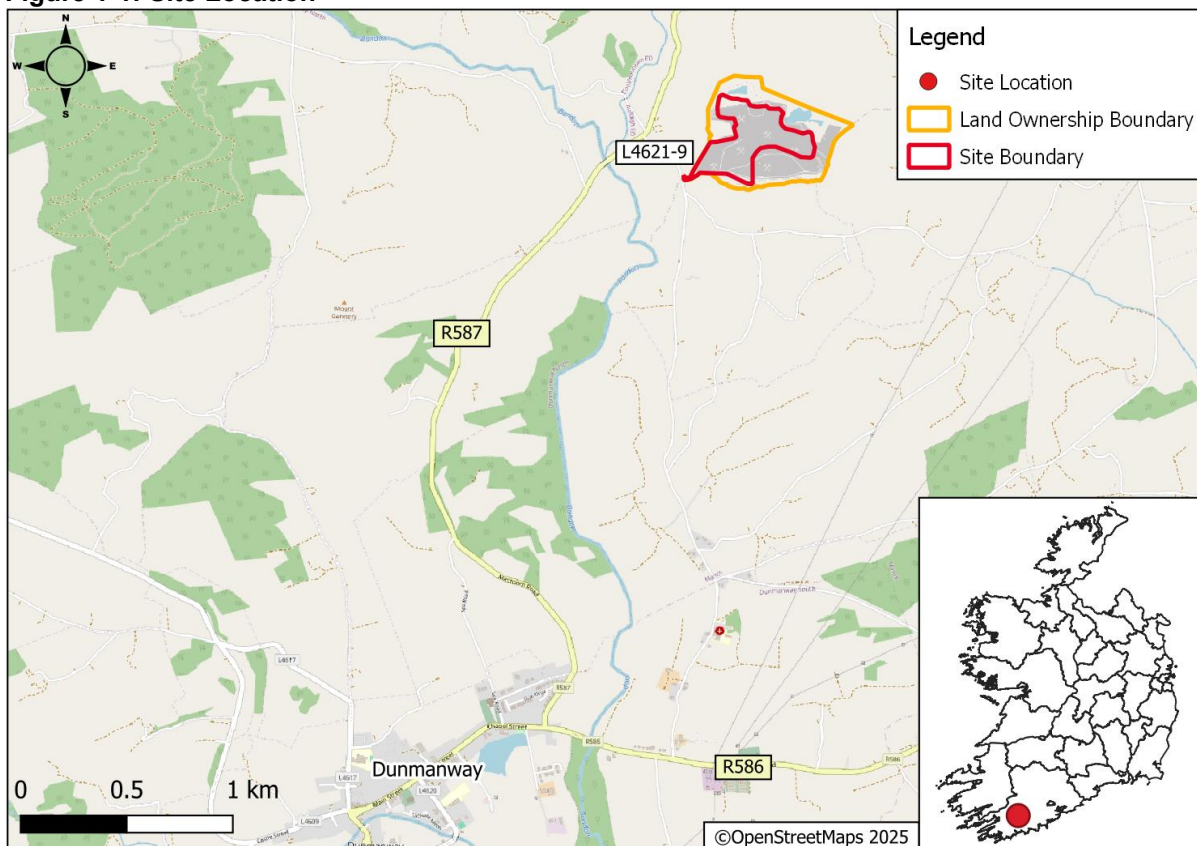
Malone O'Regan Environmental ('MOR Environmental') was commissioned by McCutcheon Halley Chartered Planning Consultants ('the Applicant') to undertake an Appropriate Assessment ('AA') to assess the likely significant effects, if any, of the proposed quarrying works ('the Proposed Development') at Ardcahan Quarry, Dunmanway, Co. Cork (Irish Grid Reference: 125061 55898) on nearby sites with European conservation designations (i.e., Natura 2000 sites).

The Proposed Development will be located on a site that is circa ('ca.') 10.4 hectares ('ha') in size and is located within the townland of Ardcahan, Co. Cork, ca. 3.5km northeast of Dunmanway, Co. Cork and is shown in Figure 1-1 ('the Site').

This report has been prepared to inform the Planning Authority regarding Stage 1 (Screening) and Stage 2 (Appropriate Assessment) of the Proposed Development through the research and interpretation of best scientific, geographic and engineering knowledge, and in view of the conservation objectives of the surrounding European sites. This report seeks to determine whether the Proposed Development will, on its own or in-combination with other plans / projects, have a significant effect on European sites within a defined zone of influence of the Site.

On completion of the Appropriate Assessment Screening Report, it was found necessary to progress to a Stage 2 of the Appropriate Assessment process and prepare a Natura Impact Statement ('NIS') to assess effects on the integrity of European sites.

Figure 1-1: Site Location



1.1 Background

Planning permission has been granted for various developments within the Site Boundary at Ardcahan, Dunmanway, Co. Cork, including Planning Ref: 98/294, 11/317 and 14/616; see Table 1-1 below.

Table 1-1: Relevant Planning Application History

Planning Ref	Applicant	Details	Decision	Decision Date
98/294	Murray Bros Macadam Ltd	<i>Macadam/asphalt manufacturing plant, ancillary buildings & works, storage bays, weighbridge and septic tank</i>	Granted with conditions	02/04/1998
11317	Murray Bros Macadam Ltd	<i>Permission for the extraction of stone, to a depth of 77.52 m.o.d. (development comprises of an overall area of 4.85 hec.) and all associated site works</i>	Refused	13/07/2011
14616	Murray Brothers Macadam Ltd	<i>The quarrying of stone with an extraction area of approximately 6 hectares and to a ground (quarry floor) level of 77 metres over datum (MOD) and all associated site works.</i>	Granted with conditions	26/06/2015

The Proposed Development is similar to the scope of the previously permitted developments and will supersede the previous permitted developments. Given the zoning objective applicable to the Site, it is considered that the Proposed Development is acceptable in principle.

The Site overlaps with lands under consideration for Substitute Consent by way of a concurrent planning application. The former extraction area and adjoining lands in the south for which substitute consent is being sought are included in this NIS to accommodate ancillary quarrying activities associated with the Proposed Development.

1.2 The Applicant

Murray Brothers Macadam Ltd ('Murray Bros.') was established in 1972, and over 50 years later, it is run by the same family. The company is well-established in the Dunmanway area and currently employs seven people.

Murray Bros. acquired Ardcahan Quarry and the macadam plant at Ardcahan in 1999. Prior to this, the quarry was owned by Cork County Council and leased to Mid Cork Quarries until it was acquired by Murray Bros. The quarry was established by the Council prior to October 1964, and operations continued until Cork County Council issued a notice to cease quarrying activities in 2014 following their review of all quarries in Cork under Section 261A of the Planning and Development Act 2000, as amended.

1.3 Site Context

Ardcahan Quarry is in the townland of Ardcahan, approximately 3.5km northeast of Dunmanway, in West Cork. The Site is situated off the L4621-9 local road ('Hospital Road'), approximately 300m east of its junction with the R587 regional road, which links Dunmanway and Macroom. See Figure 1-2.

The Site is located in a rural setting, characterised by undulating topography, irregularly shaped fields and clusters of mixed woodland. The land immediately around the quarry consists of scrub, woodland, heathland and agricultural grassland. Land uses in the surrounding area primarily comprise livestock farming and rural housing. See Figure 1-2.

The nearest dwellings to the Site are located ca. 300m south, 275m west, 450m north and 400m east of the Site. There are no commercial premises or community facilities in the immediate environs.

The junction of the Caha and Bandon Rivers is located approximately 400m west of the Site. A small tributary of the Bandon River extends along the eastern and southern boundaries of the landholding.

The area within the overall landholding measures ca. 25ha. The lands are sloped with lower ground levels in the southwest (~72 to 75 metres Above Ordnance Datum ['mOD']), rising to the north (118mOD).

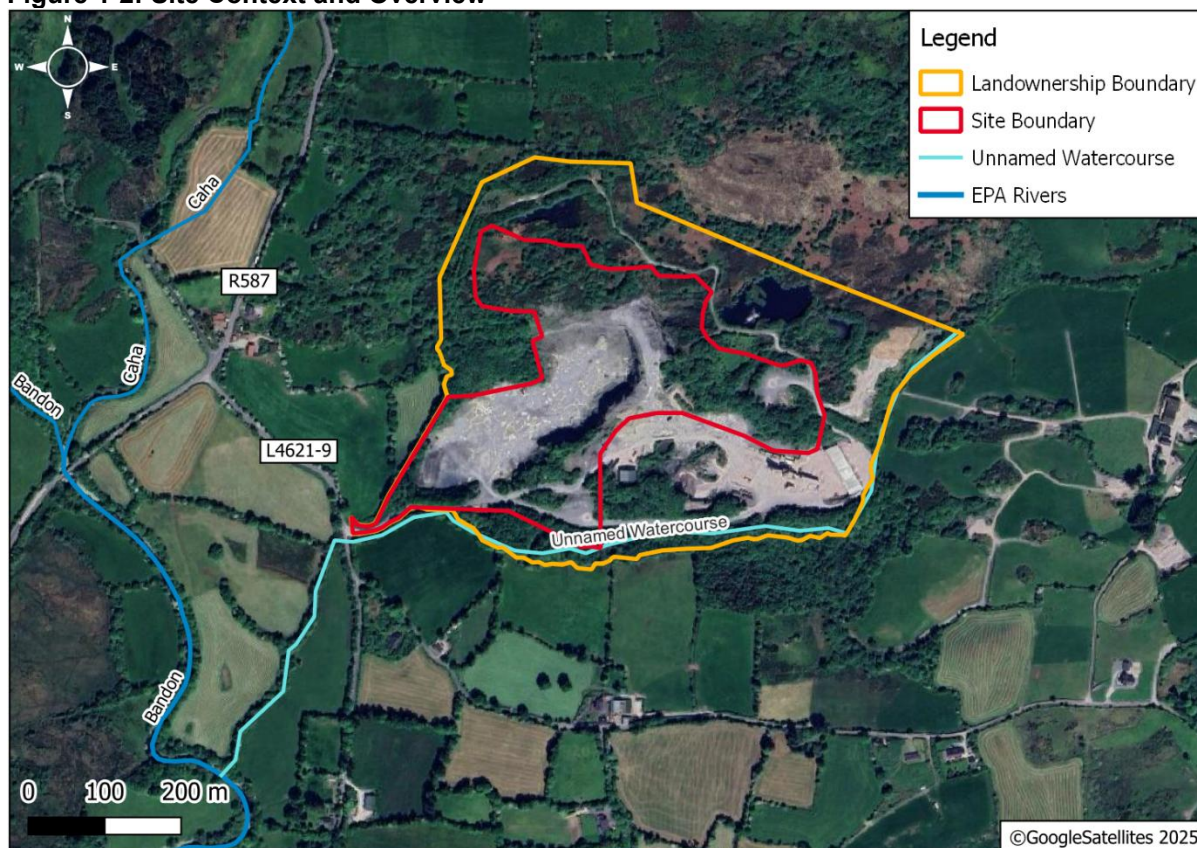
A quarry has existed on the landholding since pre-1963 and was operated by Cork County Council up until it was acquired by the applicant in the 1990's. The former extraction areas are located within the southern half of the Site.

The southeast of the Site was quarried prior to 1990 and includes a macadam production plant and buildings used for administration, welfare, production and storage purposes, which were granted planning permission under Reg. Ref. 98/294.

The southwest of the Site was quarried between 1990 and 2014 and is subject to a concurrent substitute consent application and remedial EIAR.

The northern part of the landholding has not previously been used for extraction, but portions of it were used for ancillary uses such as storing crushed product, settling ponds, access tracks and for backfilling. These were developed when the quarry was previously active and have been included within the concurrent SC planning application. There are no new access roads / tracks or settlement ponds proposed as part of this S37L application, as the intention is to avail of the existing access routes and ponds throughout the Site.

Figure 1-2: Site Context and Overview



1.3.1 Hydrology

The text below is relevant to the Appropriate Assessment. For full details on hydrology, please refer to Chapter 7 of the Environmental Impact Assessment Report ('EIAR'). The following text refers to Sections 7.3.3, 7.3.4 and 7.3.11.

Please refer to Figure 1-3 below for the on-site drainage map.

1.3.1.1 Local Site Hydrology

The following text refers to the local site hydrology, including existing ponds and streams identified on-site, as per Chapter 7 of the EIAR:

'The natural topography of the site area means that, except for a small portion of the northwestern area, all the sites surface water flows from the upland areas in the north to the lower ground in the south and southwest. This flow direction has generally been maintained during the period that the quarry has been operating, apart from with some local changes to the sites drainage pattern and discharge locations to the local watercourse, especially with the evolution of a number of site ponds and surface water management features and the development of the adjacent macadam plant.'

There are a couple of small areas that were used as shallow settlement ponds for wash water in the upper area of the quarry have been named Ponds A and B. These now tend to be dry, except after heavy rainfall, as there has been no quarrying or aggregate washing activity on the site since 2014.

Local depressions on the northern side of the site were bunded with subsoil material which allowed the formation of a number of more permanent pond features. Two, Ponds C and D, are located to the north of the settlement ponds (A & B), while Pond H is located in the north-western part of the site.

Ponds C and D drain eastwards to very small water feature (identified as Pond E), which is reportedly connected to the local stream on the eastern boundary via buried piping, (Location 01). No evidence of these pipes was found during the VCL site walkovers but access is very restricted and the area is very overgrown, so their exact location couldn't be confirmed.

Other shallow ponds are present in the middle level of the site in the macadam production area that have been identified as Ponds F, G and L. These collect runoff from the eastern side of the macadam plant and are used for retaining wash and cooling water for the bitumen production. While a lot of water is re-used and recycled between these ponds, Pond L has an overflow channel which passes through an interceptor before discharging via an open ditch to the small watercourse flowing along the southern boundary of the site, (Discharge Location 02).

There was a small wash water pond (Pond K) related to the old water treatment system to the north of these ponds but this has been decommissioned and backfilled since 2014. Other shallow ponds are present in the middle level of the site in the macadam production area that have been identified as Ponds F, G and L. These collect runoff from the eastern side of the macadam plant and are used for retaining wash and cooling water for the bitumen production. While a lot of water is re-used and recycled between these ponds, Pond L has an overflow channel which passes through an interceptor before discharging via an open ditch to the small watercourse flowing along the southern boundary of the site, (Discharge Location 02).

In the old quarry floor area, surface water pools on the ground and either evaporates, percolates slowly into the fractured bedrock or flows down gradient to the southwestern corner of the site. There is a shallow drain along the northwestern edge of the old quarry floor, which drains runoff from the old quarry face area to the southwestern corner of the site.

In the SW corner of the old quarry floor there are two small ponds, (Pond I and J), that were created by shallow berms and acted as seasonal settlement ponds which retained the site discharge water before it either percolated to ground or overtopped to a local drainage ditch and entered the local stream via a pipe going under the main access road to the quarry.

This stream enters the Bandon River about 400m to the south, south-west of the site entrance.

It is important to note that the overall size of the quarry catchment or the general destination of the rainfall runoff to the local boundary stream and ultimately to the Bandon River has not changed due to the quarrying activity.

While some surface water retention in the sites ponds has been established, that would reduce potential peak flows as they fill up, the overall water budget, runoff or recharge characteristics for the site area have not significantly changed due to the historic quarrying activities.'

1.3.1.2 On-site Quarry Surface Water Catchments

'A detailed topographical survey of the whole site area, completed by drone survey in 2014, and this, together with observations during the site walkovers the site area, has enabled the identification of six small sub catchments, (named A1 to A6), across the quarry site. This survey map showing these catchments is presented in Appendix 7.1, and a description is given below with risk summary in Table 1-2.

Area A1 is a small bunded area on the eastern side of the site which used to be used for the deposition of surplus fines material which is a by-product of the macadam plant

production. While there is no obvious discharge location from Area A1, (with all water percolating to ground), there are reportedly pipes under this area which allow overflow water from the large ponds (Ponds C and D), in catchment Area A6, to discharge to the boundary stream adjacent to the eastern edge of Area A1, (Discharge Location 01).

Area A2 includes the area to the west of A1 and the eastern side of the macadam plant. Water from the upper part of this catchment can runoff to the local stream via a ditch, (Discharge Location 02), while the concrete floor in the macadam plant aggregate storage and processing area drains to the stream via three silt trap manholes and an old interceptor, (Discharge Location 03).

Area A3 occupies the central part of the site which includes the old settlement ponds on the upper level, (Ponds A & B), and the three shallow ponds (Ponds F, G and L), used by the bitumen production facility. The overflow from Pond L, is via an interceptor, through woodland and under the access road via a pipe to the boundary stream, (Discharge Location 04). Area A4 occupies the southwestern area of the quarry site including the old quarry floor area and adjacent rock faces and benches. The main discharge point for this area is via the settlement ponds (Ponds I and J), to the local stream under the sites access road, (Discharge Location 05).

Area A5 is located in the northwestern area of the site and runoff is either westwards from the low lying area occupied by Pond H or northwards into the scrub land on the north side of the internal old access track which was created in this area.

Area A6 is located in the northeastern area of the site and includes Ponds C and D, the overflow from which is reportedly piped under Area A1 to the boundary stream (Discharge Location 01) to the east.

A description of the catchment areas, discharge locations and current runoff risk is summarised below in Table 7.1. The current runoff risk is primarily related to the macadam plant activity in Catchment Areas 2 and 3 and when there is occasional vehicular activity around the old Quarry Floor in Area 4.'

Table 1-2: Summary of On-Site Surface Water Catchments

Area ID	Description	Discharge to Stream Location	Risk
Area 1 (A1)	Small area on surface of macadam process plant fines deposition site	No direct linkage to a discharge point.	Low
Area 2 (A2)	Upper area to north of and around the macadam plant process Area.	(Risk of slippage of fines slope is considered low.)	High
Area 3 (A3)	Central part of old quarry area (now used as part of the macadam process area) and up-land area to north.	Upper area runoff can flow to road site ditch (Loc 02) while macadam plant area goes to drains and pipe to stream (Loc 03). Established in late 1990's.	Medium
Area 4 (A4)	Large area covering southwest part of site where main quarrying was done. The area is now only occasionally accessed by quarry vehicles.	Ponds A, B, F, G, K and L are in this area which discharge to stream via overflow from Pond L, (Loc 04). Original quarry discharge established pre-1990.	Low – to Medium
Area 5 (A5)	North-western part of the site – little development in this area.	Ponds I and J are located in the SW corner – lowest part of the site where water drains to. Connected to stream via overflow ditch, (Loc 05). Likely that	Low

Area ID	Description	Discharge to Stream Location	Risk
		original site drainage was in this area but enhanced in 1990's.	
Area 6 (A6)	North-eastern part of site area with freshwater ponds and no quarrying.	Contains Pond H but there is no evidence of connectivity to the active quarry or linkage to a discharge point.	Low

'The linkage between ponds is shown on the site map in Appendix 7.2 and photos of the ponds and drainage systems in the small quarry site catchments are presented in Appendix 7.2 and 7.6.

It is important to note that despite the quarry's proximity to the adjacent boundary stream the surface water runoff is prevented from directly entering it, except at the discharge locations described previously, as the fall of ground is generally away from the stream and sloping back into the quarry site in most areas and also by the presence of a continuous earthen berm which runs along the eastern and southern edge of the access road of the quarry. The camber of the quarry access road is generally northwards, back into the quarry site, preventing runoff going directly to the watercourse.

The future quarrying related runoff risk for the developments expansion will primarily relate to Catchment Area 4 with all storm water from the Phase 1 to 3 areas flowing towards Discharge Location 05 in the southwestern corner of the site. Other site catchments may be impacted by increased vehicle movement via the established internal track on the northern boundary of the expansion area.'

1.3.1.3 Stormwater Runoff

'The proposed quarry expansion covers approximately five hectares of the central (Phase 1), eastern (Phase 2) and western (Phase 3) areas of the site. Currently the majority of the proposed extraction is within the local catchment area identified as A4 which represents the old quarry area in the southwestern and central part of the site. The majority of the 1.2 Ha area of Phase 2 is currently within the northern portions of the catchment areas A2 and A3. As excavation works progress the lower topography of the ground will mean that all rainfall precipitation that falls in the expansion area will flow towards the old quarry and low-lying southwestern corner as runoff, with some limited percolation to ground also occurring.

The majority of the proposed future expansion areas have already been stripped of soils and are primarily composed of exposed bedrock with no or just thin soil cover. Therefore, the runoff coefficient, aquifer recharge and stormwater runoff characteristics of the site are not expected to significantly change as the quarry works progress.

The annual rainfall in this part of the Ireland is given by Met Eireann as being between in the order of 1,200 to 1,400 mm and an average annual rainfall (AAR) of 1,243mm/yr is given for the Dunmanway area. Data from the GSI gives an effective evaporation value for the south of Ireland as 486mm/yr giving an effective annual precipitation of 757mm/yr. Percolation to ground in terms of aquifer recharge of a Poor Bedrock Aquifer (PI) is given by the GSI as about 50mm to 100mm/yr therefore the majority of the effective rainfall will collect on the site as surface water which will pond on the quarry floor and flow to the existing surface water ponds and discharge locations. In the southwestern corner of the site these are Ponds I & J and Location 05. The surface water control system that was and is still in place in the southwestern portion of the site is a water settlement and attenuation pond area located down hydraulic gradient

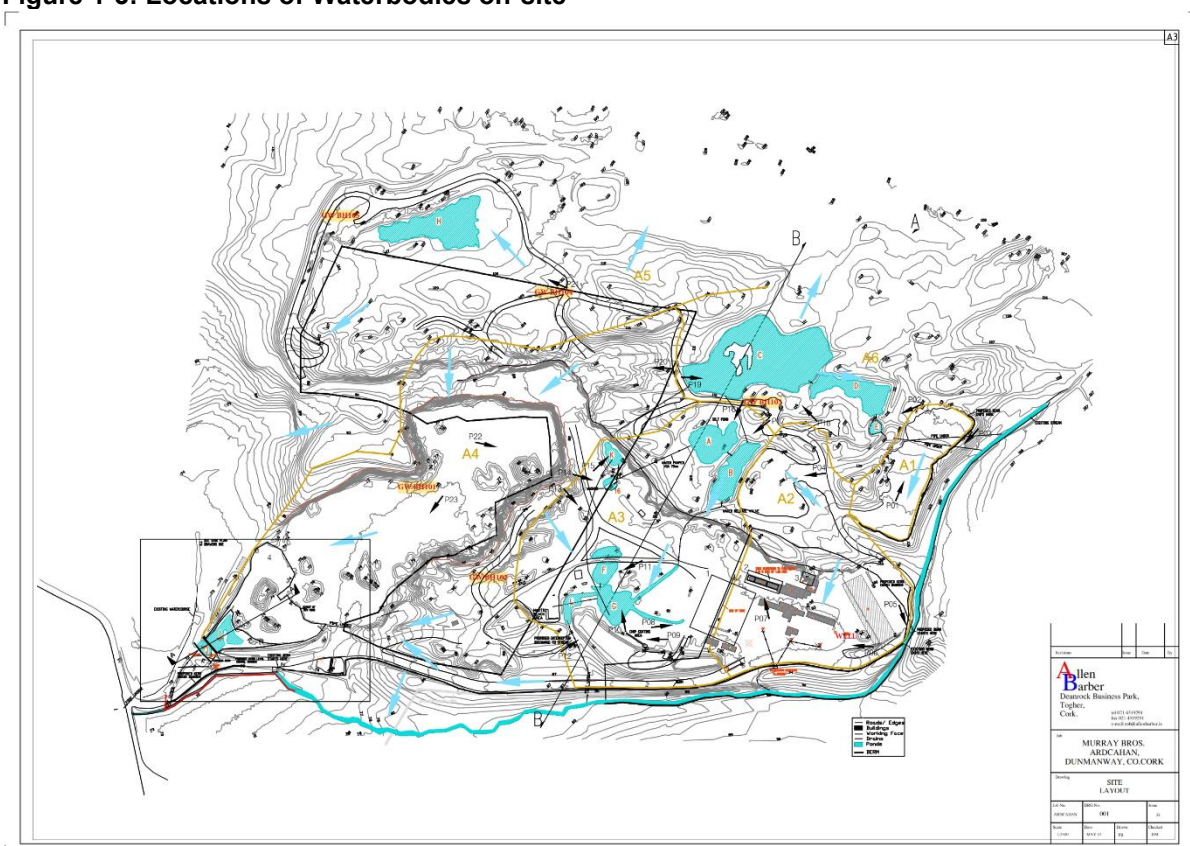
of the old quarry floor. This area forms the lowest topographical area of the site with ground heights of 72 to 73m OD.

The main pond (Pond I) is triangular in shape and has a berm on the two down gradient sides and is open to the existing quarry floor on the up-gradient side. Surface water runoff goes to Pond and the water level and size of the pond is allowed to increase and decrease east wards, towards the old quarry floor, as the amount of runoff changes depending on rainfall duration and intensity. Pond I over tops its western berm to the small lower pond (Pond J) which allows some further attenuation before overtopping a final berm and flowing to a drainage ditch which flows to the adjacent watercourse via a pipe under the main access road to the site.

It is proposed to improve the control of the sites discharge flow by constructing a discharge chamber in the Pond I berm which will have a moveable sluice system and then installing an interceptor in the Pond J discharge, so that the potential of any residual suspended sediment or hydrocarbons occurring in the site discharge is mitigated. A 24 hour solar powered turbidity probe is to be incorporated in the Sluice Discharge system from Pond I which will enable real time monitoring of water quality.

All the storm water runoff from the southwestern quarry area discharge from Ponds I and J to the drainage ditch and then adjacent watercourse. This is identified as the site's discharge Location 05.'

Figure 1-3: Locations of Waterbodies on-site



1.3.2 Watercourses within the vicinity of the Site

The Site is situated within the Bandon-Ilen WFD Catchment [Catchment_ID: 20] and the Bandon_SC_010 subcatchment [Subcatchment_ID: 20_6] [1].

There are no hydrological features of note within the Site boundary; however, there are three hydrological features of note within close proximity to the Site.

1. Boundary Stream

There is one unnamed watercourse ('boundary stream') on the southern boundary of the Site that is not present on EPA maps. However, this stream is present on Ordnance Survey Ireland ('OSI') and historic maps. The boundary stream flows in a southwest direction and drains into the Bandon River ca. 375m downstream of the Site.

2. The Bandon River

The Bandon River is located ca. 260m southwest of the Site, at its closest point. This river flows in a southeasterly direction and drains into Kinsale Harbour, ca. 54km downstream of the Site. The Bandon River forms part of the Bandon River SAC

Under the WFD 2000/60/EC, as amended, the Environmental Protection Agency ('EPA') classifies the status and the risk of not achieving good water quality status for all waterbodies in Ireland [2]. According to the WFD 2019-2024 monitoring events, the most up-to-date data at the time of writing this report, the water quality within the Bandon_020 is considered to be '*moderate*,' and the status of this river is considered '*at risk*' [1].

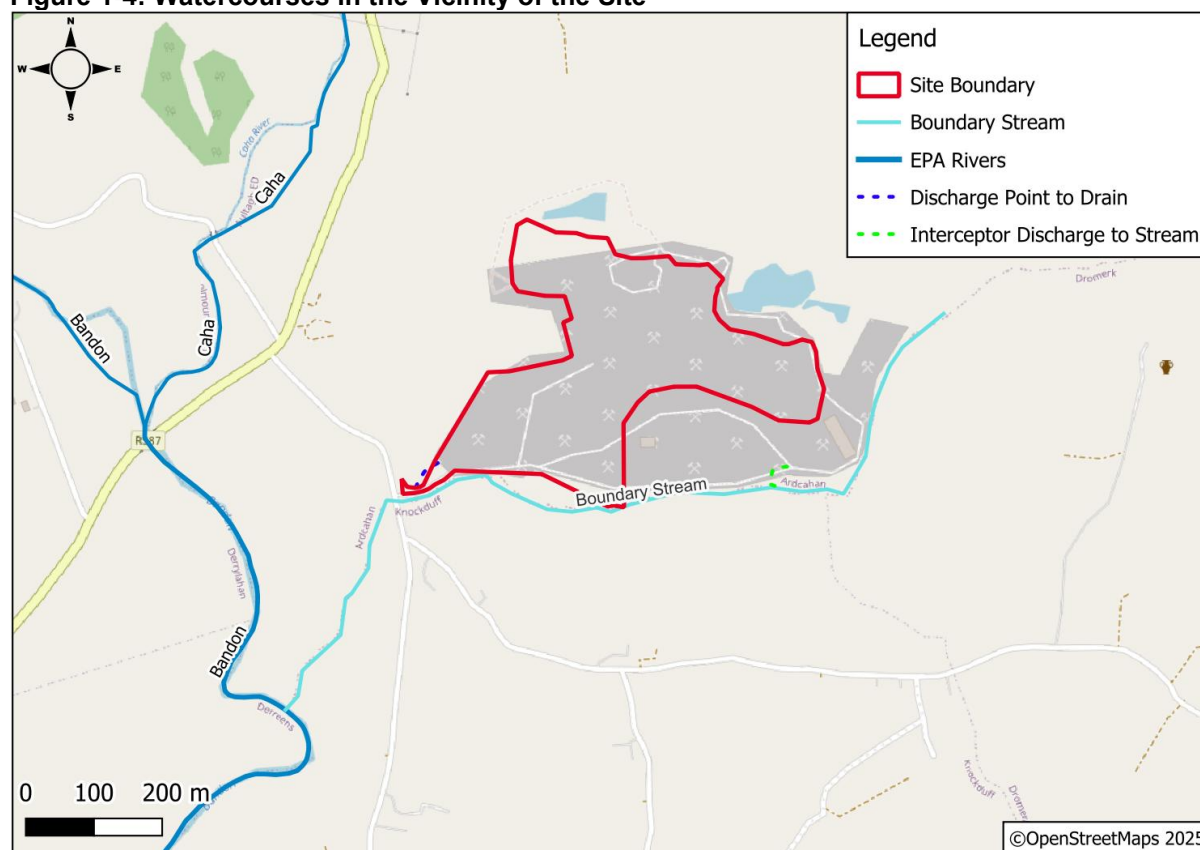
3. The River Caha

The Caha River is located ca. 360m to the northwest of the Site, at its closest point. This river flows in a southeasterly direction, and drains into the Bandon River, which subsequently drains into Kinsale Harbour, ca. 54km downstream of the Site. The Caha River forms part of the Bandon River SAC

Under the WFD 2000/60/EC, as amended, the EPA classifies the status and the risk of not achieving good water quality status for all waterbodies in Ireland [1]. According to the WFD 2019-2024 monitoring events, the most up-to-date data at the time of writing this report, the water quality within the Caha River is considered to be '*good*,' and the status of this river is considered '*at risk*' [1].

The location of the key surface water features in the vicinity of the Site is illustrated in Figure 1-4 below.

Figure 1-4: Watercourses in the Vicinity of the Site



1.3.3 Drainage Ditch Network

The Office of Public Works ('OPW') Flood Maps identifies Drainage Districts, Arterial Drainage Schemes and Benefited Areas [3]. Arterial Drainage Schemes were works that were carried out under the Arterial Drainage Act, 1945 to improve land for agriculture and to mitigate flooding. The Benefited land identifies land that was drained as part of the Drainage District with the aim to improve land for agriculture and to mitigate flooding.

During the Site walkover, a number of drainage ditches were noted throughout the Site. At the time of the survey, wet and dry drainage ditches were observed. It should be noted that these drainage ditches are not designated as part of a Drainage District or Arterial Drainage Scheme, and the Site does not form part of any of the benefited areas [3].

1.4 Statement of Authority

This report was reviewed and approved by Mr. Dyfrig Hubble, Associate Director - Ecologist. Dyfrig is a full member of the Chartered Institute of Ecology and Environmental Management ('CIEEM'). Dyfrig has over 18 years' experience working in the ecological consultancy sector, including habitat surveys and appraisals and specialist protected species surveys in support of Appropriate Assessments.

1.5 Regulatory Context

The following guidance documents were adhered to for the preparation of this NIS report:

- Office of the Planning Regulator ('OPR') Practice Note PN01, *Appropriate Assessment for Screening for Development Management*, The OPR [4];

- *Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*, European Commission [5];
- *Guidelines for Ecological Impact Assessment in the UK and Ireland*, Chartered Institute of Ecology and Environmental Management [6];
- *Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC* [7];
- *Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities*, DoEGLH [8]; and,
- *Appropriate Assessment under Article 6 of the Habitats Directive; Guidance for Planning Authorities. Circular NPW 1/10 and PSSP 2/10*, DoEGLH [9].

This NIS was prepared in accordance with and in compliance with the following legislation:

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna, better known as “The Habitats Directive”. This provides the framework for legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. The Habitats Directive was transposed into Irish law by the Planning and Development Act 2000 (as amended) and the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 / 2011) (as amended) [10].

For completeness, the Planning and Development Act 2000 (as amended) states “European site” means:

- a. A candidate site of Community Importance (‘cSCI’);
- b. A site of Community Importance (‘SCI’);
- c. A Special Area of Conservation (‘SAC’);
- d. A candidate Special Area of Conservation (‘cSAC’); or,
- e. A Special Protection Area (‘SPA’).

These are Special Areas of Conservation (‘SACs’) designated under the Habitats Directive and Special Protection Areas (‘SPAs’) designated under the Conservation of Wild Birds Directive (79/409/EEC as amended 2009/149/EC) (better known as “The Birds Directive”). The Birds Directive was also transposed into Irish law through the Planning and Development Act 2000 (as amended) and S.I 477 / 2011 [10].

Article 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect European sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment.

“Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subjected to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In light of the conclusions of the assessment of the implication for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public”

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures. First, the project should aim to avoid any negative impacts on European sites by identifying possible impacts early in the planning stage and designing the project in order to avoid such impacts. Second, mitigation measures should be applied, if necessary, during the Appropriate Assessment ('AA') process to the point where no adverse impacts on the site(s) remain. If the project is still likely to result in adverse effects, and no further practicable mitigation is possible, it is rejected. If no alternative solutions are identified and the project is required for imperative reasons of overriding public interest ('IROPI') test under Article 6 (4) of the Habitats Directive, then compensation measures are required for any remaining adverse effect.

1.6 Stages of Appropriate Assessment

There are four distinct stages to undertaking an AA as outlined in current European Union ('EU') and Department of Environment, Heritage and Local Government ('DoEHLG') guidance:

Stage 1: Screening

This process identifies the potential impacts of a plan or project on a Natura site, either alone or in combination with other plans and projects and considers whether these impacts are likely to be significant. If potentially significant impacts are identified, the plan or project cannot be screened out and must proceed to Stage 2.

Stage 2: Appropriate Assessment

Where potentially significant impacts are identified, an assessment of the potential mitigation of those impacts is required; this stage considers the appropriateness of those mitigation measures in the context of maintaining the integrity of the Natura 2000 sites. If potential significant impacts cannot be eliminated with appropriate mitigation measures, the assessment must proceed to Stage 3.

Stage 3: Assessment of Alternatives Solutions

This process examines alternative ways to achieve the objectives of the plan or project that avoid adverse impacts on the integrity of the Natura 2000 site if mitigation measures are deemed insufficient.

Stage 4: Imperative Reasons of Overriding Public Interest (IROPI)

Assessment where no alternative solution exists for a plan or project and where adverse impacts remain. This includes an assessment of compensatory measures, where in the case of projects or plans, can be considered necessary for IROPI.

2 METHODOLOGY

2.1 Determining Zone of Influence

The starting point for this assessment was to determine the Zone of Influence. The Zone of Influence comprises of the area in which the Proposed Development may potentially affect the conservation objectives (or qualifying interests) of a European site.

Guidance on the Appropriate Assessment of Plans and Projects in Ireland notes that a distance of 15km is recommended for the identification of relevant European sites [8]. However, guidance from the NPWS recommends that the distance should be evaluated on a case-by-case basis with reference to the nature, size and location of the project, the sensitivities of the ecological receptors and the potential for in-combination effects (cumulative) [9]. For some projects, the distance could be greater than 15km, and in some cases, less than 100m.

The definition of the zone of influence for the proposed works includes evaluating the following:

- Identification of the European sites that are situated within, in close vicinity or downstream within the zone of influence of the Proposed Development;
- Identification of the designated habitats and species and conservation objectives for the identified European sites;
- Identification of the environmental conditions that stabilise and increase the qualifying interests of the European sites towards favourable conservation status;
- Identification of the threats / impacts, actual or potential, that could negatively impact the conservation objectives for the European sites;
- Identifying the activities of the proposed works that could give rise to significant adverse impacts; and,
- Identification of other plans or projects, for which in-combination impacts would likely have significant adverse effects.

2.1.1 Source-Pathway-Receptor Model

European sites are only at risk from significant effects where a source-pathway-receptor link exists between a Proposed Development and a European site. This can take the form of a direct impact (e.g., where the Proposed Development is located within / in close vicinity to the boundary of a European site), or an indirect impact where impacts occur outside of the European site but affect ecological receptors within the European site (e.g., impacts to water quality which can affect estuarine habitats at a distance from the impact source).

The likely effects of the Proposed Development on any European site have been assessed using a source-pathway-receptor model. A source-pathway-receptor model is a standard tool used in environmental assessment [11] [12]. The model comprises:

- A *source*: any potential impacts from the Proposed Development, e.g., the runoff of sediment / construction pollution.
- A *pathway*: the means or route by which a source can affect the ecological receptor.
- A *receptor*: the qualifying interests and / or special conservation interests of the European sites.

In order to establish the Zone of Influence of the Proposed Development works, the likely key environmental impacts / changes associated with the Proposed Development were

determined, having regard to the project characteristics set out in Section 3.3 of this report. The Zone of Influence for various potential impact pathways is discussed in Section 4.1.

2.2 Desk-Based Review

A desk-based review of information sources was completed, which included the following sources of information:

- Review of aerial maps of the Site and surrounding area;
- The National Parks and Wildlife Service ('NPWS') website was reviewed with regard to the most up-to-date details on conservation objectives for the European sites relevant to this assessment [13];
- The Cork County Council Planning Portal was reviewed to obtain details about existing / proposed developments in the vicinity of the Site [14];
- The Department of Housing, Local Government and Heritage's planning portal – the National Planning Application Database was reviewed to obtain details about existing / proposed developments in the vicinity of the Site [15];
- The National Biodiversity Data Centre ('NBDC') website was reviewed with regard to species distributions [16]; and,
- The EPA Maps website was reviewed to obtain details about watercourses in the vicinity of the Site [1].

2.3 Consultation

A Site meeting was held with Claire Deasy from the NPWS on 23rd April 2025 to discuss the ongoing and proposed ecological surveys at the Site. The NPWS were satisfied with the approach that was discussed during the Site meeting, and a follow-up email was issued outlining these surveys. No further comments were made.

In addition, an email was sent to the NPWS on 16th January 2025, regarding the proposed wash plant to be installed in the quarry as part of the Proposed Development. No response was provided.

2.4 Field-Based Studies

2.4.1 Habitat Survey

An initial Site walkover was undertaken on 9th September 2023, by a suitably qualified and experienced MOR Environmental Ecologist, to establish a baseline of the extent and the quality of habitats present on the Site and to identify any potential ecological receptors associated with the Natura 2000 sites. Updated habitat surveys were undertaken on the following dates:

- 17th September 2024: and,
- 21st May 2025.

The habitat surveys were undertaken for the Site utilising the Heritage Council's – '*A Guide to Habitats in Ireland*' [17]. This is the standard habitat classification system used in Ireland and includes both a desk-based and field-based assessment.

The assessments were extended to also identify the potential for these habitats to support other features of nature conservation importance, such as species afforded legal protection under either Irish or European legislation.

2.4.2 Aquatic Species

Specialist biological assessments of the Bandon River were undertaken by Pascal Sweeney of Sweeney Consultancy, a recognised expert aquatic ecologist, on 25th and 30th May 2023, 1st and 22nd June 2023 and 10th September 2024. The survey aimed to identify and examine the Bandon River, which is designated for freshwater pearl mussel.

The Site and surrounding area were assessed for its suitability to support freshwater pearl mussel. This assessment and survey was undertaken for this project by Pascal Sweeney, of Sweeney Consultancy. Relevant methodologies and results are available in Appendix A.

2.4.3 Invasive Species

The Site was visually assessed for the presence of any noxious / invasive species that are regulated under the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374/2024) [18], such as Japanese knotweed (*Reynoutria japonica*) and Himalayan balsam (*Impatiens glandulifera*).

The Site was also assessed for the presence of non-regulated invasive species that have the potential to impact local biodiversity.

2.4.4 Other Species

In addition, as part of the overall ecological assessment for the Site, an assessment was carried out of the Site's potential to support other species considered to be of value for biodiversity, including those identified as occurring locally by the desktop study. This information was used as part of the NIS to inform the assessment of potential adverse effects on both Annex 1 Species and Habitats identified as part of the study.

2.5 Survey Conditions and Limitations

Some areas of the Site were inaccessible due to dense vegetation. However, these areas were assessed at a distance using binoculars and using aerial imagery. It is not considered that this survey limitation will alter the findings of this assessment.

3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 Scale of Development

The Proposed Development involves quarrying of quartzitic sandstone, thereby extending the existing quarry and extraction area. Reserves at the quarry are estimated to be in excess of 3.7 million tonnes of aggregate. The proposed extraction area measures 5.01 ha, and the stone will be extracted from the existing levels down to a level resembling the existing quarry floor, i.e. approximately 75mOD.

The rock will be extracted using industry-standard blasting methods to produce broken rock by creating a variable bench depth of 15-20mOD. The number of benches will vary depending on the existing ground level and depth of overburden; however, the final quarry floor level across the site will be approximately 75mOD.

Depending on demand and market conditions, it is anticipated that the proposed quarrying activities will generally produce between 175,000 and 200,000 tonnes of aggregate per annum, with an anticipated upper annual output of 225,000 tonnes.

Recognising that the scale of output may fluctuate during the lifetime of the quarry due to commercial, economic and/or operational factors, this application seeks permission for a 20-year duration. A 20-year lifespan is considered appropriate and commensurate with the facilitation of the extraction of the estimated known reserves and implementation of the proposed remediation plan, while factoring in potential fluctuations in quarrying activity over the period.

This approach is in line with the *Quarries and Ancillary Activities Guidelines for Planning Authorities (2004)*, which note that in deciding the length of planning permission for quarries, planning authorities should have regard to the expected life of the reserves within the Site.

3.2 Development Phasing

Works associated with the Proposed Development can be broadly grouped into three distinct types of activity, as follows:

- Construction;
- Operational; and,
- Decommissioning and Remediation.

The impacts of each activity type are assessed for each environmental topic.

For the purpose of the EIAR and NIS, the Construction Phase comprises the initial development phase, which involves stripping of any overburden and preparing for rock extraction activities.

3.3 Construction Activity

Due to the nature of quarrying activity, there is no traditional 'Construction Phase'. There is an initial development phase involving stripping of any overburden soils and preparation for rock extraction activities. For the purpose of the EIAR and NIS, this phase is referred to as the Construction Phase.

To facilitate the excavation of stone, any vegetation and soil cover will be removed to reveal the underlying rock; it is estimated that an average depth of approximately one metre of soil is to be removed at the Site. The majority of vegetation will be mulched and retained on site.

All excavated soil will remain on site and utilised for cover to denuded areas and for placement in berms to screen the active area and to cultivate (two) new native woodland pockets in the east and west of the proposed quarried area – refer to Appendix D – Remediation Plan.

Excavators and dump trucks will be the main types of machinery / plant used during this phase to remove overburden and construct berms.

3.4 Operational Phase

3.4.1 Quarrying Process

Following the removal of the existing overburden, the exposed rock will be drilled and blasted through the use of industrial explosives to a pre-determined design. Blasting will be undertaken by a specialist company experienced in blast design and preparation of quarry faces to maximise efficiency, safety, and minimise blast emissions. By this method, blasted material will be released in close proximity to the receding quarry face. Blast events are generally expected to occur a maximum of monthly but will occur more frequently when quarry faces are under initial development, and small design blasts are required. It is anticipated that drilling would generally occur one week prior to blasting and that blasting would be required up to 12 times per year (up to twice in any given 30-day period), depending on stock levels, demand, commercial and blast design considerations.

Excavated material will be processed on-site by primary and secondary crushing with more limited tertiary crushing and processing, including washing, for specialist products. The aggregate processing area is to be situated in the southwest of the existing quarry void, with the blast pile being fed into the existing mobile primary jaw crusher, using a loading shovel. The crushing will be located within the upper area of the existing void, possibly advancing with the quarry face, while the washing will be located towards the centre of southwest of the existing quarry floor, which primarily comprises the redd / attenuation pond.

Blasted rock will be loaded into a series of crushers and screeners to reduce the size of the rock fragments into both crusher run of various nominal sizes, single-sized material, and finer crushed sand. Product is stored in stockpiles and storage bays on-site. Some of the products, such as single-sized aggregates and crushed sand, will be washed for specialist use.

The main plant and machinery used during processing will include:

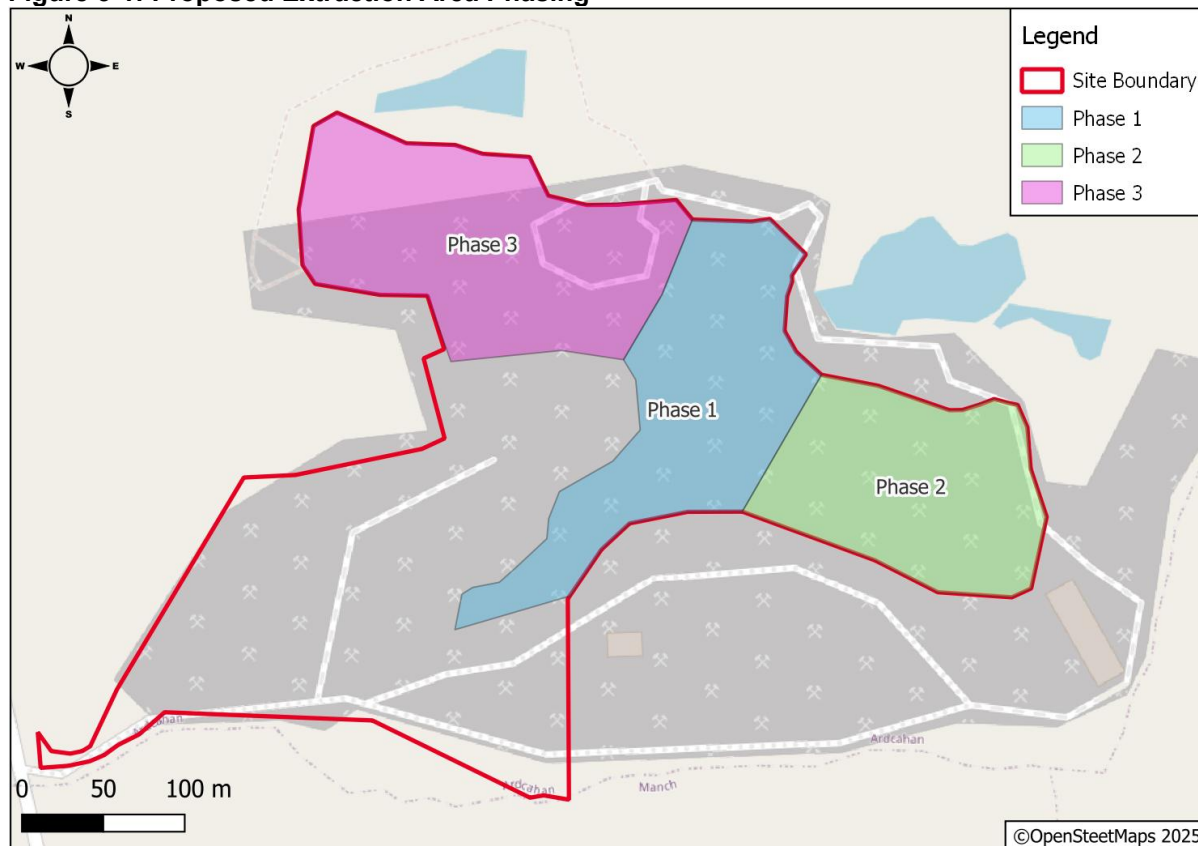
- Track-mounted drill rig to drill blast holes;
- Excavator to load crusher;
- Mobile jaw crushers and cone crushers to crush the excavated stone;
- Screening units to size and separate blasted rock;
- Washing plant and associated conveyors and settlement lagoons;
- Wheel loader used to stockpile products and load customer road trucks; and,
- Other machinery, including loading shovels, excavators and haulage vehicles.

3.4.2 Phasing Strategy for Extraction

Extraction activity is planned to be undertaken over three phases. The indicative phasing strategy for the total extraction area is shown in Figure 3-1.

The first phase will take place to the northeast of the former extraction area and will be extended to the east in the second phase, and to the west in the third phase. This approach will concentrate phase 1 and 2 extraction activities in proximity to the existing macadam plant, access road and the established quarry facilities (car parking, administration buildings and welfare facilities) in the southeast of the Site. Phase 3 is located to the northwest of the application area.

Figure 3-1: Proposed Extraction Area Phasing



The size of the extraction area and approximate duration of each phase are set out in Table 3-1, below. The phasing strategy is indicative and may be subject to change over the lifetime of the Proposed Development in response to market conditions or other factors.

Table 3-1: Indicative Phasing Strategy for Extraction

Phase No.	Extraction Area	Average Depth of Extraction Area (Metres)	Volume (m ³) Est.	Tonnage (millions)	Approximate Duration
Phase 1	Ca. 1.75ha.	25	437,500	1.14	6 – 7 years
Phase 2	Ca. 1.2ha.	30	360,000	0.94	5 – 6 years
Phase 3	Ca. 2.06ha.	30	618,000	1.61	6 – 7 years
Total	Ca. 5.01ha.	20 to 30m	1,415,500	3.68	17 – 20 years

3.4.3 Water Management

Management of water at the site falls into two categories: (i) surface water collection and discharge; and (ii) process water recycling and top-up.

(i) Surface water collection and discharge

The natural topography of the site area means that, except for part of the northwestern area, all the Sites' surface water flows from the upland areas in the north to the lower ground in the south and southwest. This flow direction has generally been maintained during the period that the quarry has been operating, but with some local changes to the Site's drainage pattern and

discharge locations, especially with the evolution of a number of ponds (Ponds A to L) and surface water management catchment areas (areas A1 to A6) – refer to Appendix B.

Surface water is prevented from directly entering the adjacent boundary stream as the fall of the ground is generally away from the eastern boundary stream and sloping back into the quarry site in most areas. In addition, the presence of a continuous earth berm along the eastern and southern edge of the access road of the quarry works to prevent surface water run-off from entering the stream.

Damping down of the roadways and stockpiles using water bowsers and mist sprayers will be used during dry periods to reduce the potential for dust generation around the site and on the tarred access road to the Site.

(II) Process water recycling and top up

Process water on this Site is generated by way of the aggregate washing facility, whereby fine dust/clayey material is removed from products, generally single-sized aggregates and crushed sand, with the wash water recycled through three settlement lagoons in series, which then run to a deeper clean water lagoon for re-use in a closed loop system. Unwashed material is stockpiled for washing and/or brought directly from the main stockpile area. Washed product is stored in various stockpiles, based on product type, in proximity to the washing plant, for loading and dispatch.

The need for washing of the product is limited and tends to be seasonal in scale. Water loss from the system is to the washed product, and this is primarily to be topped up from groundwater ingress into the deeper clean water lagoon; this ingress is estimated as a likely maximum of 60 cubic metres per day, which is regarded as a small-scale abstraction when in operation.

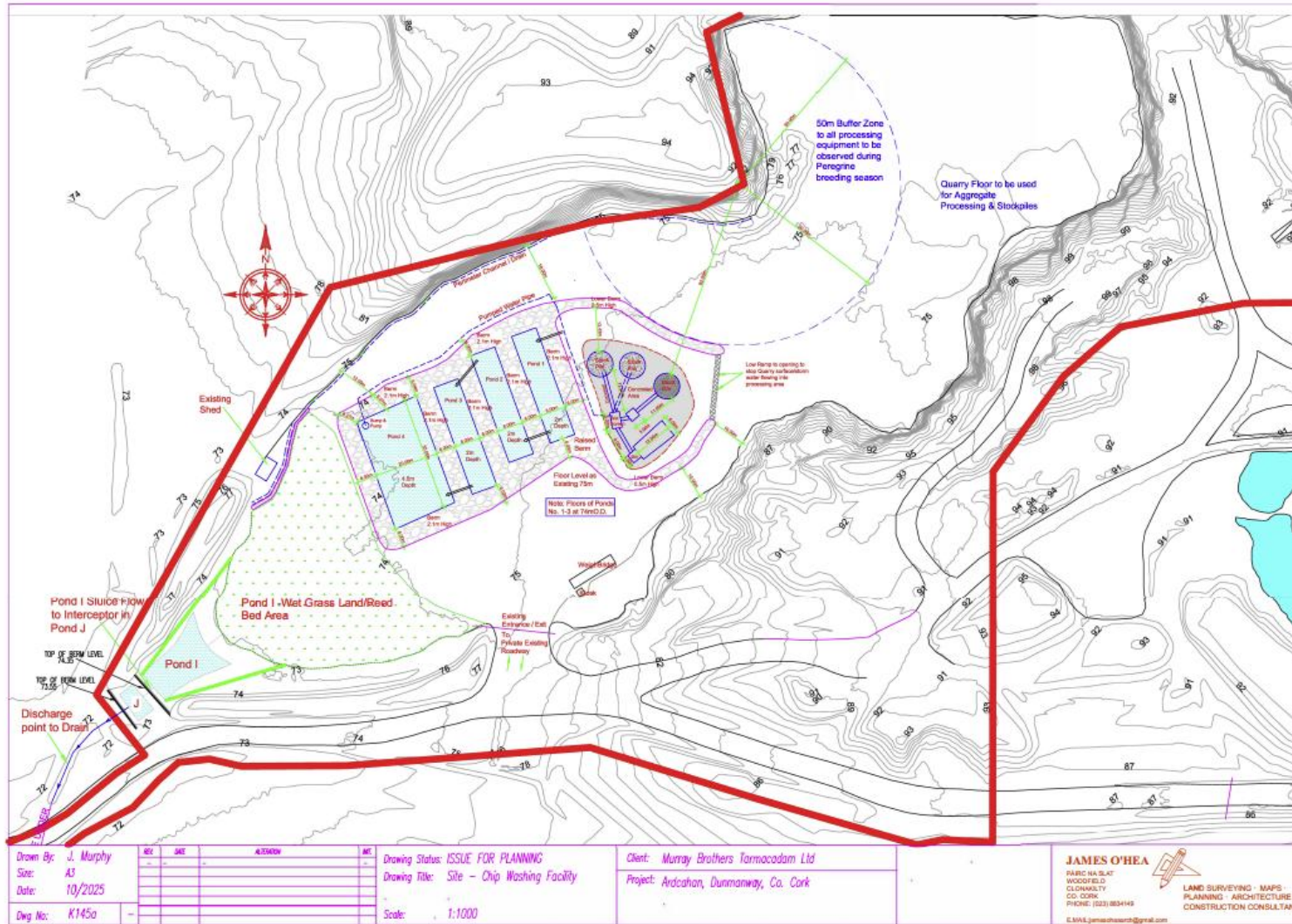
The sealed/lined settlement lagoons are sized to be shallow, relatively long and narrow, in line with best design guidance, including that contained in the EPA Guidelines [19], to promote settlement of fine material out of suspension. The lagoons will provide approximately 24 hours of retention of washwater before release to the clean water pond. The clean water pond will provide approximately two days of water supply to ensure continuity in drier periods. As before, top up will primarily be by ingress into the final deeper clean water pond, with a further option of rainwater harvesting from a nearby stormwater channel in drier periods.

There is no reasonable potential for impact from this closed system, and there is no discharge as maximum water levels are self-regulating, based on up to 5 hours of product washing in any day. The washing facility is designed to capture and use stormwater originating in this area, and to positively obstruct the ingress of stormwater from the rest of the site outside the immediate washing facility area.

Lagoons are to be cleaned out by a mechanical shovel as and when required, based on visual inspection. Silt from these lagoons will be stored and used in site remediation works.

Please see Figure 3-2 below for a detailed drawing of the proposed wash plant.

Figure 3-2: Proposed Wash Plant



3.4.4 Access

Vehicles will use the existing Site entrance at the L4621-9 ('Hospital Road') in the southwest of the Site. Quarry-related HGV traffic will travel to and from the site via the R587 situated 300m to the west.

Traffic will be managed to allow for staggered vehicular movements distributed as evenly as practical across the day, including during local traffic peak hours.

3.4.5 Staff and Hours of Operation

It is intended that the quarrying operations will employ five to six full-time staff and up to six part-time staff. Haulage will generally be carried out using personnel directly employed by Ardcahan Quarry and additional haulage services provided by specialist haulage and logistic companies, as required.

General hours of operation will be as follows:

- Loading of vehicles between 7 am and 7 pm, Monday to Friday;
- Quarry processing operations from 8 am to 6 pm, Monday to Friday; and,
- Saturday quarry processing operations from 8 am to 2.30 pm (loading from 7am).

Blasting operations within 10 am – 4 pm, Monday to Friday, save for emergencies where holes are already loaded.

3.4.6 Decommissioning and Remediation

Restoration works on site cannot practically include reinstatement to previous ground levels, and a quarry void to be left open. As part of the Decommissioning Phase all stockpiles, plant and equipment will be removed, and remediation will include the cultivation of two native woodland pockets in the east and west of the proposed quarried area. In addition, the settlement ponds on the southwest of the Site will form a seasonal lagoon(s) which will be planted in its margins with native wetland plugs. Please see Appendix D.

3.4.7 Drainage

3.4.7.1 Stormwater Drainage Control

The hydrology assessment noted the following, which is relevant to the Appropriate Assessment. Please refer to Chapter 7 of the EIAR for further details of the assessment that was undertaken.

'All the drainage from the expansion area will follow the natural and created quarry floor topography and flow towards the low-lying ground in the SW corner of the site. The established attenuation system in place for the old quarry in the southwestern portion of the site was a dual water settlement and attenuation pond system created behind berms in the corner of this area.

Two Attenuation Ponds provided for the retention of storm water running off the western half of the Ardcahan site in the past, identified as Ponds I & J in catchment Area A4. (see the site Map in Appendix 7.1 and 7.11). The remnants of these ponds and their berms still remain and the water from the first pond (Pond I) percolates by overflowing the berm estimated to be at about ~74.5m OD, to the second (Pond J) before it percolates over another berm, at about ~73.5m OD, to a shallow drainage ditch that connects to the local stream, via a pipe under the main quarry access road near the site entrance.

The Pond I is triangular in shape and has berms on its existing down gradient sides and is open to the existing quarry floor on the up gradient side. This allows surface

water to easily runoff to the pond and also for the size of the pond to increase and decrease as the amount of runoff fluctuates. The area that this attenuation pond services includes the established quarry floor, the future access road and all three excavation areas that will ultimately cover an area which is conservatively estimated to be about 8.5 hectares in size. These ponds will function as a dual water retention and attenuation system.

In order to establish a more controlled discharge system and also increase the retention capacity of the storm water discharge system from this area the two existing pond systems (Ponds I and J) will have the over topping berm system in Pond I replaced by the construction of a discharge chamber with an adjustable water level and flow control overtopping weir type penstock that will overflow to the last pond (Pond J) which will have with a final interceptor in the outflow before off site discharge.

The discharge chamber will be constructed into the down gradient berm of Pond I and this will release surface storm water via a weir type penstock overflow control system. The penstock is a standard way of controlling water releases with the required over topping height controlled and changed manually as necessary. The weir overflow will help ensure that only the 'top' water, with the least risk of having suspended sediments, will be discharged. In order to increase the size of the attenuation area and to have more control of the potential discharge it is proposed that a water level control, such as adjustable penstock weir described above, would be installed in a discharge chamber in the berm of the first pond that would allow storage capacity of the attenuation pond to be greatly increased for periods of heavy or persistent rainfall. This pond area would be developed as a wet grass and natural wet scrub/woodland which would help enhance the settlement rate of any suspended sediments and increase its biodiversity.

The area up to the 74m contour line in this part of the site covers an area of over 5,000m², so by installing an adjustable weir that would over top at ~74.3mOD, the capacity of the pond would be increased to about the calculated volume of a 100yr storm event occurring over the whole south western portion of the site. A cross section of the southwest corner of the berm and proposed attenuation pond system are included in Appendix 7.11.

The proposed penstock weir system would have about a 1m by 1m adjustable door which would be installed in a constructed concrete chamber located in the existing berm between ponds I and J. The preliminary engineering design for the proposed outlet chamber is presented in Appendix 7.11.

These adjustable penstock weir systems are very common in managing water levels in facilities such as water treatment plants and settlement ponds etc. In the absence of a power supply water level control is done manually with the pond level usually kept low but the sluice door is lifted or lowered depending on weather and water conditions. A full-time automatic turbidity monitoring logger will be installed at the sluice weir outfall, and this would alert the site operators if turbidity was increasing in the outflow. A typical product brochure for 'off the shelf' adjustable penstocks, interceptors and turbidity monitoring equipment are shown in Appendix 7.11.

It is anticipated that the civil engineering work for the discharge chamber and interceptor would take a few weeks to complete but would have to be undertaken during a dry summer/autumn period when the water level in the existing ponds and risk of heavy rainfall are low. Any civils work completed in this area of the site will only be done in dry weather to reduce the risk of runoff from the works entering the downgradient watercourse.

With regard to the “Handbook of methods for controlling surface waters in and around aggregate quarries” which was published by the UK Mineral Industry Research Organisation (MIRO) and Department for Environment, Food and Rural Affairs (DEFRA) in 2004 the proposed surface water controls and attenuation pond system complies with and follows many of the recommendations of that publication. The quarry operation will include all the measures outlined in Section 2.3 of the Handbook document in the control of contamination and particularly sediments through:

- Segregating runoff from different areas of the site;
- Recycling process water;
- Using constructed settlement ponds; and,
- Use of vegetation to reduce sediment mobility.

The calculations used in estimating the rainfall and runoff from the site follow the format and formula presented, in particular the use Met Office data, such as rainfall return period information and the use of the Rational Formula for calculating runoff. Input parameters in calculating flow rates are compliant with the Handbook as they include the surface type, surface area, infiltration capacity and slope. It is noted that in Section 4 the Handbook states that complex mathematical approaches to runoff calculations are not appropriate for the majority of quarry applications. The Met Eireann site data is presented in Appendix 7.10.

Some of the methods outlined in the Handbook are not relevant to the Ardcahan Site as it is a small catchment (<0.5Km²) and therefore not suitable for the 1999 UK Flood Estimation Handbook (FEH) calculations while the 1975 UK Flood Studies Report (FSR) is recognised in the document as not being suitable for hard rock quarries or urban catchments. Some of the surface water flow equations presented in the document are not directly applicable to the Ardcahan Quarry site as diversion channels, culverts and soak-aways are not present.

By coincidence, the example in the Handbook (Example 5.2 on page 57) “calculating the required dimensions of an attenuation pond” uses a 6Ha site (with 1ha vegetated), which is similar to the proposed quarry area with similar 100yr storm rainfall intensities to those applicable at the Ardcahan site. The calculated pond dimensions for the Ardcahan site are about 74m x 74m x 1m depth (~5,475m³), due to the conservative assumptions used in the Ardcahan calculations, that there is no vegetative effect and that a very low infiltration coefficient of 0.75, equivalent to pavement or light industrial land runoff, is used. Refer to the attenuation calculations discussed below and also included in Appendix 7.10.

The proposed attenuation pond (I) has the dual functions of providing a surface water retention structure that will help avoid flooding by providing adequate storage for runoff during 100yr rainfall events and also by controlling the potential discharge of elevated concentrations of suspended sediments or other contaminants from the site.

The final discharge pond (J) acts as final small settlement lagoon for the site and the proposed interceptor is proposed to be installed as part of the discharge system from this pond as a final piece of water quality infrastructure for the site. See some generic Interceptor options in Appendix 7.11.

The establishment of the lower SW corner of the site as a very large attenuation pond and seasonal wet grassland habitat, with a controlled discharge, can be achieved before any quarrying works commence. Most quarry infrastructure will be established in the northern work area from the start and the future development plan includes the creation of a second quarry access in the NW corner of the Phase 1 excavation area

within about the second year of the proposed works. This will reduce the amount of machinery traffic on the internal track in the southwestern part of the site near the pond.

It is proposed to establish the surface water attenuation area and introduce more vegetation into the existing pond system at the start of the development and then this 'natural' system can be left mature and develop through the lifetime of the active quarry, into the restoration phase and beyond.

The manual penstock will help control the flow rates to Pond J and the full-time turbidity probe will help ensure the penstock is raised if suspended sediment levels increase at the discharge.

The system of an over-topping berm outlet in Pond J will be replaced by the instillation of an interceptor system which will function as a final filter for the stormwater discharge and will further help mitigate any pollution risk.

A detailed map of the I & J ponds is included in Appendix 7.11 of the EIAR, together with information on a generic penstock discharge and bypass interceptor.

3.5 Decommissioning / Remediation Phase

The decommissioning plan for the expansion phase areas is to start reinstatement works once the eastern Phase 2 expansion area is completed. Stockpiled subsoil and soil will be spread over the exposed bedrock and planted with native flora, such as grasses, wildflowers and trees. As the initial Phase 1 area will be needed for access to the later quarry phases, it will be reinstated after the excavation works in the western Phase 3 area are completed.

Once the quarry works are finalised, the wash plant, weighbridge, administration office and related facilities will be decommissioned and removed off-site. The two lower attenuation ponds (Ponds I and J) and associated wetland area will be left in-situ in order to enhance the wetland habitat and biodiversity potential for the locality and will help reduce peak flows to the river after heavy rainfall.

While there may be some initial short-term sediment runoff risk from the reinstatement soil spreading works, in the long term, the replanting will eliminate this risk and reduce the runoff rate as rainfall will be absorbed and retained by the soil and vegetation cover. The thin soil will also protect the bedrock.

3.6 Monitoring

The following environmental monitoring will be undertaken as part of the Proposed Development.

3.6.1 Biodiversity

The following ecological monitoring is being proposed as part of the Proposed Development, as per best practice guidelines and in line with the monitoring detailed in Chapter 6: Biodiversity of the EIAR:

Habitats

- A habitat survey will be undertaken within the Survey Area every second year for the duration of the Proposed Development to monitor any impacts of the Proposed Development on the habitats in the surrounding area and to monitor the Oak-Birch-Holly Woodland and Dry Silicious Heath.

Aquatic Species

- Annual biological monitoring, in the form of Q-Rating Sampling, should be completed by a suitably qualified aquatic ecologist between April to June at

dedicated upstream and downstream locations on the 'boundary stream', as done previously; and,

- Annual freshwater pearl mussel surveys should be completed by a suitably qualified aquatic ecologist and reports submitted to the NPWS.

Invasive Species

- An annual invasive species survey will be undertaken by the project Ecological Clerk of Works ('ECoW') to monitor the implementation of the invasive species management plan on-site, until the Site is remediated – see Appendix C; and,
- Following the eradication of invasive species on-site, the Site will be monitored for invasive species as part of the biennial habitat surveys.

3.6.2 Water

The following water monitoring is being proposed as part of the Proposed Development as per the monitoring detailed in Chapter 7: Water of the EIAR:

'Very regular, (daily) visual inspections and regular (monthly to quarterly) sampling and chemical monitoring of the small water course for pollution indicator parameters such as pH, total suspended sediments, turbidity, COD, and hydrocarbons will be completed at the sites discharge point and well as locations up gradient and down gradient of the site. As well as establishing a full-time turbidity probe on the discharge from Pond 1 a daily visual inspection of the site discharge outflow (Location 05) will be undertaken by site staff.'

Annual biological monitoring, in the form of Q-Rating Sampling, should be completed by an aquatic ecologist between April to June at dedicated upstream and downstream locations on the small water course, as done previously.

Monthly groundwater levels should be recorded from the monitoring boreholes (BH01 to BH05), established around the site and bi-annual monitoring of the groundwater quality should be completed for a range of water quality indicator parameters, including hydrocarbons from the down gradient borehole (BH01), mid-borehole (BH02) and one of the upgradient boreholes (one of BH03 to BH05).'

3.6.3 Dust

The following dust monitoring is being proposed as part of the Proposed Development, as per the monitoring detailed in Chapter 8: Air Quality of the EIAR:

'Monitoring for dust deposition is proposed using the Bergerhoff Method as per German Standard VDI 2119. This monitoring methodology is best practice for quarry sites. Monitoring is recommended to occur along the site boundary and compliance with the TA Luft limit value of 350 mg/m²/day assessed over the monitoring period of 30 days (+/- 2 days). Monitoring will indicate whether dust mitigation measures are working satisfactorily and whether quarrying operations are leading to potential off-site dust impacts.'

4 IDENTIFICATION OF EUROPEAN SITES

In accordance with the European Commission Methodological Guidance [7], a list of European sites that can be potentially affected by the Proposed Development has been compiled. Guidance for Planning Authorities prepared by the Department of Environment, Heritage and Local Government [8] states that defining the likely zone of impact for the screening and the approach used will depend on the nature, size, location and the likely significant effects of the project. The key variables determining whether or not a particular European site is likely to be significantly affected by a project are:

- The physical distance from the project to the European site;
- The presence of impact pathways;
- The sensitivities of the ecological receptors; and,
- The potential for in-combination effects.

All SPAs and SACs within 15km have been considered to assess their ecological pathways and functional links. As acknowledged in the OPR guidelines [4], few projects have a zone of influence this large; however, the identification of European sites within 15km has become widely accepted as the starting point for the screening process. For this reason, all SPAs and SACs within 15km have been identified for consideration as part of the screening.

There are three European sites located within 15km of the Site - these are identified in Figure 4-1 and Table 4-1.

Figure 4-1: Site Location and European Sites within 15km

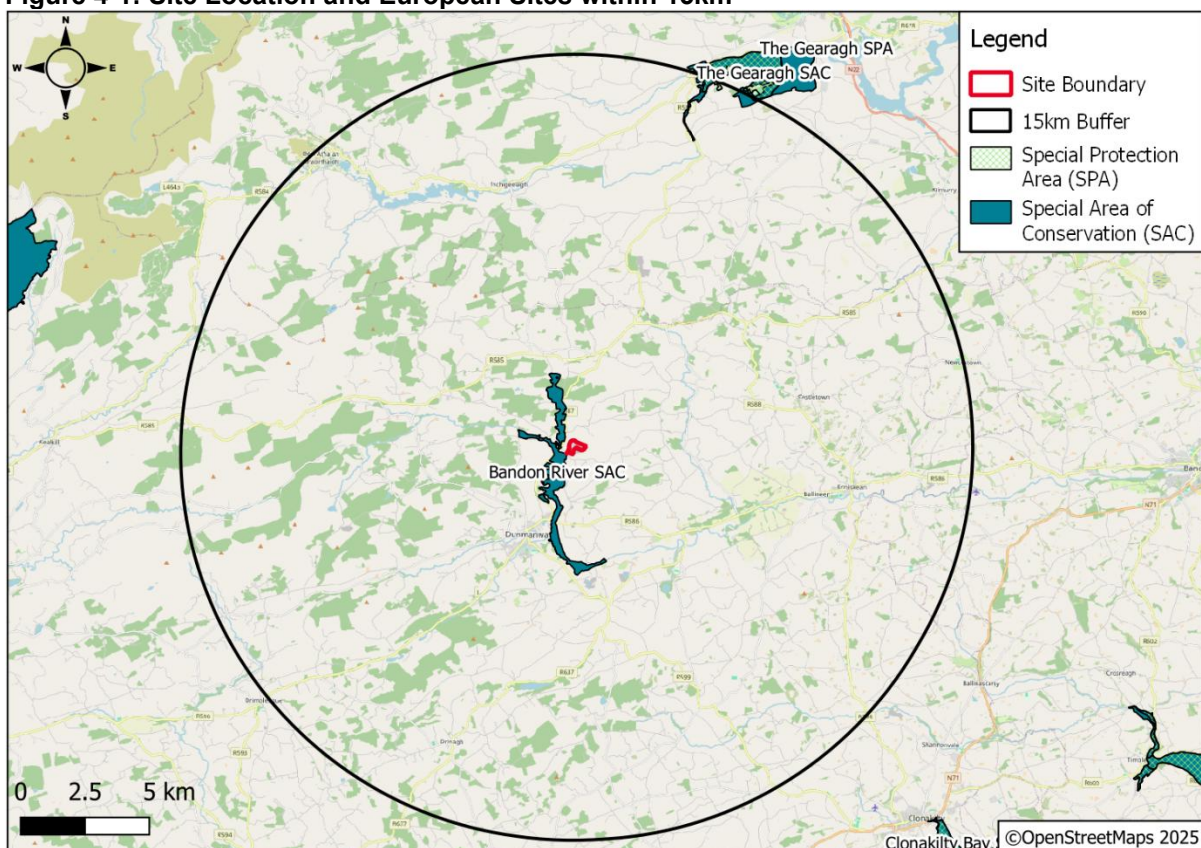


Table 4-1: European Sites within 15km of the Site

Site Name	Code	Distance	Direction from the Site
Special Areas of Conservation ('SAC')			
Bandon River SAC	002171	ca. 10m	W / SW
The Gearagh SAC	000108	ca. 12.7km	NE
Special Protection Area ('SPA')			
The Gearagh SPA	004109	ca. 14.6km	NE

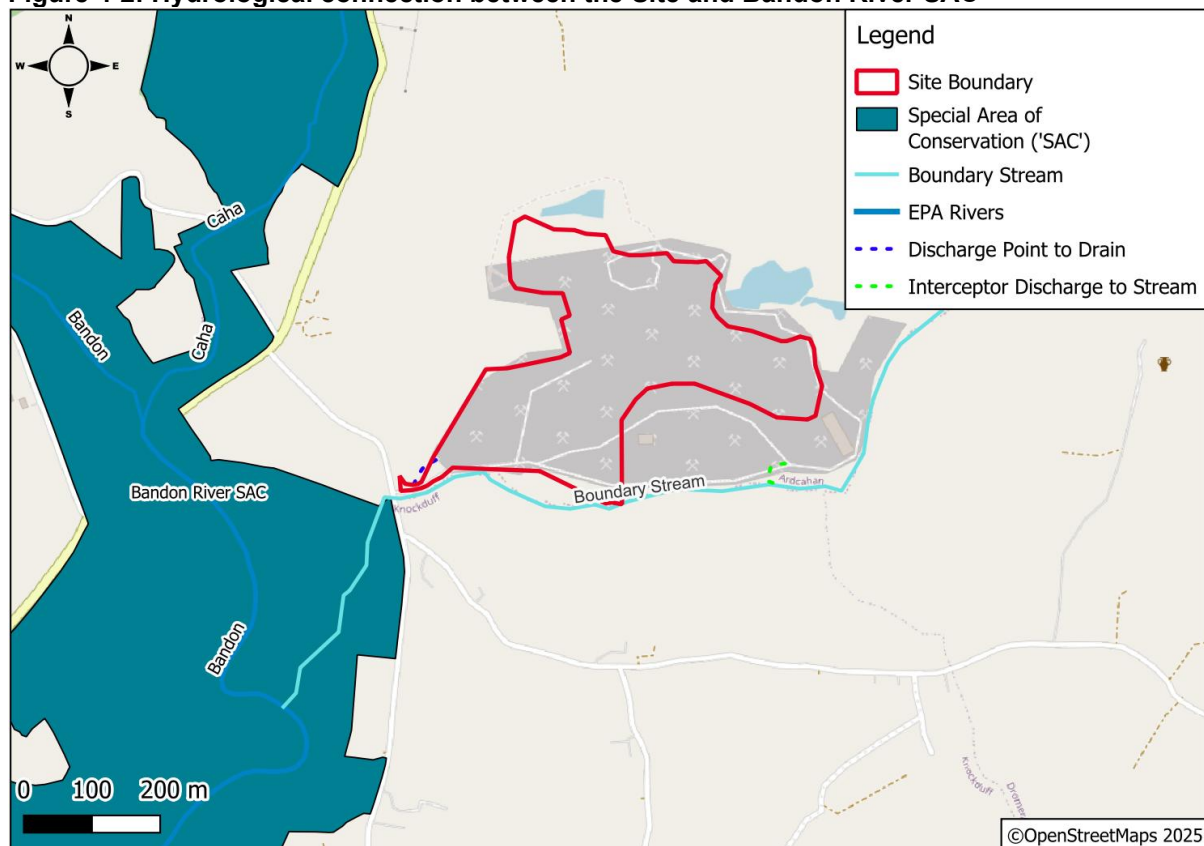
4.1 Hydrological Connection

The boundary stream that flows along the eastern and southern boundaries of the Site discharges into the Bandon River ca. 350m downstream after it crosses the L4621-9 road. The boundary of the Bandon River SAC covers the area south of where the boundary stream crosses the road.

Additionally, as there are current water discharges – see Figure 4-2 below from the Site to the unnamed watercourse and as part of the surface water management of the Proposed Development, there will be a controlled discharge system implemented.

Therefore, the Site is hydrologically connected to the Bandon River SAC via the boundary stream on the eastern and southern boundaries of the Site. See Figure 4-2.

Figure 4-2: Hydrological connection between the Site and Bandon River SAC



4.2 Identification of European Sites within Zol

The Zone of Influence ('Zol') comprises the area in which the Proposed Development may potentially affect the conservation objectives (or qualifying interests) of a European site. The definition of Zol for the proposed works evaluated multiple factors as outlined in Section 2.1 and discussed below. Please note that the extent of Zol differs for different environmental aspects, e.g. air, water, etc.

4.2.1 Habitat Loss / Degradation

The Site is located within the existing quarry within a rural setting, characterised by undulating topography, irregularly shaped fields and clusters of mixed woodland. The land immediately around the quarry consists of scrub, woodland, heathland and agricultural grassland.

The Site is not located within any European Site. Two habitats identified within the landownership correspond with habitats listed under the EU Habitats Directive; however, these habitat types are not designated features of the River Bandon SAC. Old Sessile Oak Woods with Ilex and Blechnum [91A0] is a designated habitat for the Gearagh SAC, this SAC is located over ca. 12.7km away from the Site. It is not considered that the area of woodland located within the landholding and the woodland habitat within the SAC are interdependent on each other, given the distance between the two areas.

Both the European Dry Heaths [4030] and Old Sessile Oak Woods with Ilex and Blechnum [91A0] are located outside of the Site and will not be directly impacted by the Proposed Development. In addition, a minimum buffer zone of 25m between works areas and these habitats has been incorporated into the design, along with other mitigation measures for the quarry works, to ensure that these habitats are protected from the Proposed Development works. Please refer to the Biodiversity Chapter in the EIAR for full details.

The river located within close proximity to the Site is considered suitable for freshwater pearl mussels and brook lamprey, species designated under the Bandon River SAC.

Therefore, it is possible that the habitats and habitats of species designated under the Bandon River SAC could be negatively impacted by the Proposed Development, and as such, the Bandon River SAC has been screened in for further consideration.

4.2.2 Water Quality Impairment

A hydrological connection was identified between the Site and the Bandon River SAC, via the boundary stream, as described in Section 3.2. Additionally, the SAC is located ca. 10m from the Site at its nearest point. A detailed Water assessment has been undertaken as part of the application by Viridus Consulting Ltd, and full details are presented in Chapter 7 of the EIAR.

Potential water quality impacts would typically be associated with the release of sediment and other pollutants to surface water during the Construction, Operational and Decommissioning and Remediation Phases of the Proposed Development, therefore the Zol would be considered to include the receiving waterbodies adjacent to and downstream of the Site during the Construction Phase within 5km.

It can therefore be concluded that there could be significant adverse effects on the River Bandon and River Caha, and subsequently the Bandon River SAC, without appropriate mitigation measures and as such, the Bandon River SAC has been screened in for further consideration.

4.2.3 Air Quality Impairment

According to the Institute of Air Quality Management ('IAQM') Guidelines, the potential adverse effects from dust arising from construction to ecological receptors occur within 50m

of a construction site [20]. In addition, potential adverse effects from mineral dust to ecological receptors from hard rock quarries can occur within 400m of dust-generating activities [21].

As the Proposed Development constitutes a mineral operation, which will involve many operations traditionally associated with mineral extraction, such as;

- Blasting;
- Crushing;
- On-site transportation; and,
- Off-site truck movements.

A detailed air quality assessment has been undertaken as part of the application by AWN Consulting, and full details are presented in Chapter 8 of the EIAR.

The primary impacts to air quality will occur from operational activities such as the extraction of materials, screening, crushing, and processing of materials, blasting operations and the movement of vehicles on site, which have the potential to release dust and particulate matter (PM₁₀ and PM_{2.5}) emissions.

Engine emissions from vehicles accessing the site have the potential to impact air quality during the Operational Phase of the development through the release of nitrogen dioxide (NO₂) and particulate matter (as PM₁₀ and PM_{2.5}) emissions.

The air chapter outlined that no significant impacts to air quality are predicted during the Construction Phase of the Proposed Development.

As part of the Operational Phase of the Proposed Development, the air chapter states that

*'Predicted dust deposition rates, and PM10 and PM2.5 concentrations from the quarrying operations are in compliance with the ambient air quality limit values which are set for the protection of human health and the environment. With proposed mitigation measures in place it can be concluded that the proposed development will have a **long-term, localised, direct, negative and not significant** effect on air quality'.*

As part of the Decommissioning Phase of the quarry:

*'impacts to air quality from decommissioning works are likely to be similar or lesser than those predicted for the operational phase as similar site activities will be undertaken, such as movement of materials, infilling, etc. The impact to air quality will be **short-term, direct, negative and not significant**.'*

Therefore, the Zol for air quality impairment is established at the Site with a 400m buffer.

The Gearagh SAC and the Gearagh SPA are located ca. 12.5km and 14.4km respectively from the Site and therefore did not require a detailed dust assessment.

However, given that the Bandon River SAC is located ca. 10m from the Site, further consideration will be given to this European site as a result of air quality impairment. Mitigation measures are outlined in Section 7.1.2.

4.2.4 Noise / Disturbance

Noise from Construction, Operational and Decommissioning / Remediation Phases of the Proposed Development has the potential to cause disturbance to resting, foraging and commuting species designated under European sites.

Individual species will provoke different behavioural responses to disturbances at different distances from the source of disturbance:

- Transport Infrastructure Ireland ('TII') (formally the National Roads Authority ('NRA')) has produced a series of best practice planning and construction guidelines for the treatment of certain protected mammal species (i.e. otter), which indicate that disturbance to terrestrial mammals would not extend beyond 150m [22]; and,
- Studies have noted that different types of disturbance stimuli are characterised by different avifaunal reactions; however, in general, a distance of 300m can be used to represent the maximum likely disturbance distance for waterfowl [23].

The Zol for noise / disturbance is therefore established as the Site with a 300m buffer.

The Gearagh SAC and the Gearagh SPA are located outside of this Zol, and therefore, there is no potential for designated species to be disturbed.

Although none of the on-site habitats are suitable for species designated under the River Bandon SAC, the Site is located within 300m of the SAC.

However, the species for which the Bandon River – freshwater pearl mussel and brook lamprey – are entirely aquatic, with no terrestrial element to their lifecycle. Therefore, there is no impact receptor pathway for the Bandon River SAC in relation to potential disturbance or faunal displacement through noise / disturbance. Therefore, this European site has been scoped out from further consideration.

4.2.5 Invasive Species

The NBDC held records for two invasive species within 2km of the Site – Japanese knotweed and rhododendron [16].

Japanese knotweed and rhododendron are both non-native, high-impact plant species that are subject to restrictions under Regulations 16(1) and 17 of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374/2024) [18]. These species were both identified in the Landownership boundary. Japanese Knotweed was recorded within the Site boundary.

Four medium impact invasive species – sycamore, butterfly bush, traveller's joy and winter heliotrope – were also identified in the Landownership boundary during the surveys. These species are not currently regulated in Ireland.

Japanese knotweed is known to spread easily, particularly in relation to ground disturbance, and to spread along watercourses, impacting the riparian habitat and associated watercourses.

Given the presence of Japanese knotweed on the Site within close proximity to the proposed works areas, potential adverse effects associated with the unintentional spread of Japanese knotweed have been brought forward for further consideration.

4.3 Zol Conclusions

The Site is not located within any European sites; however, the boundaries of three are located within 15km from the Site.

Given the short duration of the construction works, the distance separating the Site from the Gearagh SAC and the Gearagh SPA, and the intervening lands separating the Site from the European sites, and the lack of impact pathways, it is considered that the Proposed Development will not result in adverse effects to these European Sites and they have therefore been screened out from further consideration.

The following European sites listed in Table 4-2 have been screened in for further consideration to assess potential adverse effects resulting from the Proposed Development.

Table 4-2: European Sites within ZoI

Site Name	Code	Distance at closest point and source-pathway-receptor link
Bandon River SAC	002171	The Site is located ca. 10m east of the Bandon River SAC, see Figure 4-2. Given the close proximity of the Site to the SAC, potential disturbance effects to designated species will be taken forward for further consideration.

The screening assessment for individual designated habitats and species for each of the screened in European sites and the potential for them to be adversely affected by the Proposed Development are presented in Section 6 below.

Further information on the screened in European sites is provided below.

4.4 Bandon River SAC (Site Code: 002171)

The river Bandon was proposed as an SAC in 2002 and formally designated as an SAC in 2019. It should, however, be noted that **candidate Special Areas of Conservation ('cSACs')** receive the same level of legal protection as fully designated SACs under Irish and EU law.

The Bandon River SAC (Site Code: 002171) consists of relatively short adjoining stretches of the Bandon and Caha Rivers. These rivers flow in a southerly direction to the east of Dunmanway, Co. Cork. Towards the southern end of the site, the Bandon River takes an easterly course. The predominant rock formations are Old Red Sandstone to the north and Carboniferous slate stretching south of Dunmanway. Soils in the northern section consist of peats, podzols and skeletal soils. The southern section consists of alluvial soils and Brown Podzolics.

The east-west exposure of Old Red Sandstone to the north of Dunmanway displays distinct ridgelines of bare rock with poor pasture and scrub. In this area around Lovers Leap, the Bandon River cuts a narrow channel southward, cascading over a series of rock steps through a narrow valley. Below this and above Long Bridge, the river widens and meanders through a fertile floodplain. Immediately south of Long Bridge, the reduced flow gradient and broad, flat valley permit the main channel to split and extend into a network of braided streams forming islands.

Table 4-3: Qualifying Annex I Habitats for the Bandon River SAC

Qualifying Habitats (* denotes Priority Habitat)	Code	Site Specific Conservation Objective
Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation	3260	Restore favourable conservation condition
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)	91E0	Restore favourable conservation condition

Table 4-4: Qualifying Annex II Species for the Bandon River SAC

Species	Species Name	Code
Invertebrates listed on Annex II of the Habitats Directive	Freshwater pearl mussel (<i>Margaritifera margaritifera</i>)	1029
	Brook Lamprey (<i>Lampetra planeri</i>)	1096

4.5 Conservation Objectives

European and national legislation places a collective obligation on Ireland and its citizens to maintain a favourable conservation status at areas designated as cSACs. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

According to the Habitats Directive, favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, is stable or increasing;
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and,
- The conservation status of its typical species is favourable as defined below.

The favourable conservation status of a species is achieved when:

- Population data on the species concerned indicate that it is maintaining itself;
- The natural range of the species is neither being reduced nor likely to be reduced for the foreseeable future; and,
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Conservation objectives for all identified Natura 2000 SAC Sites are as follows:

‘To maintain or restore the favourable conservation condition of the Annex I habitat(s) and the Annex II species for which the SAC has been selected.’

The full reports for the conservation objectives for the Bandon River SAC¹ can be found on the NPWS website [13].

¹ [Bandon River SAC | National Parks & Wildlife Service](#)

5 STUDY RESULTS

5.1 Desk-Based Study Results

5.1.1 NBDC Records

At the time of writing this report, the NBDC held no records for species designated under the Bandon River SAC within 2km of the Site in the last 10 years [16]. The NBDC records were checked on 19th March 2026. The following 2km grids were checked: W25L, W25G, W25H, W25I, W25M, W25N, W25R, W25S and W25T [16].

The parameter of 10 years was chosen to allow for habitat adaptation and modification; it is considered that any records over 10 years old are not representative of the current distribution of species populations.

5.1.2 Irish Wetland Bird Survey ('I-WeBS') Records

The I-WeBS data for nearby sites within the vicinity of the Site – Ballynacarriga Lake, Mahona Lough and Garranes Lake – was provided by BirdWatch Ireland on 19th February 2025. The records were reviewed in order to gain an understanding of the potential assemblage of bird populations that may utilise the areas within the vicinity of the Site.

The I-WeBS data for wintering seasons between 1994/1995 to 2019/2020 for the above sites were analysed. However, it should be noted that data for the 1995/1996 and 1997/1998 periods, the periods between 2007/2008 – 2011/2012, inclusive and the periods between 2015/2016 – 2017/2018, inclusive, were unavailable. A total of 29 species were recorded during this period. However, during the most recent counts available for the 2019/2020 season, a total of 26 species were recorded.

None of the species recorded were recorded in numbers that would be considered of international importance. One species was recorded in numbers that would be considered of national importance – coot were recorded at numbers of national importance at the Ballynacarriga site during the 2019/2020 season.

It should be noted that these sites are not located within the immediate vicinity of the Site; the nearest records to the Site would be from the Mahona Lough site, which is located ca. 5 km south of the Site. Therefore, these populations of bird species are not located within close proximity to the Site. Furthermore, it should be noted that none of these species identified are considered to occur within this area exclusively.

5.2 Field-Based Study Results

5.2.1 Habitat Assessment

The following section provides details of the initial field-based assessment that was undertaken for the Site and Landownership boundary on 17th September 2024 and the updated assessment on 21st May 2025.

Active Quarry and Mines (ED4)

This habitat was identified as the main habitat type within the Site and comprised areas previously subject to the extraction of rock and associated operations. The habitat was predominantly unvegetated, characterised by exposed rock faces and compacted quarry floor. Regular disturbance from machinery and ongoing activity limited any significant vegetation establishment. Occasional patches of bare ground and temporary water accumulation were observed, but lacked notable flora or fauna at the time of survey. The habitat is considered to have low ecological value due to the lack of soil substrate, its ongoing disturbance regime and limited botanical diversity, as well as ongoing disturbance in parts of the quarry associated with the current permitted operations at the Site.

Buildings and Artificial Surfaces (BL3)

Artificial surfaces were present throughout the Site, primarily in the form of internal quarry roads, inactive quarry floor areas and built infrastructure, including a security office and a macadam plant. The built infrastructure is located in the Landownership Boundary and is not part of the Site.

While largely composed of compacted gravel or concrete, some of these areas supported sparse, pioneer vegetation within cracks, edges and less-trafficked sections. Species observed in these locations included oxeye daisy (*Leucanthemum vulgare*), lesser trefoil (*Trifolium dubium*), creeping buttercup (*Ranunculus repens*), ribwort plantain (*Plantago lanceolata*) and sweet vernal grass (*Anthoxanthum odoratum*), reflecting colonisation by disturbance-tolerant flora. These species were typically scattered and patchy, indicating low but ongoing vegetation growth within these artificial substrates.

Buildings present within the eastern portion of the Site included a macadam plant, prefabricated security office, canteen and toilets, aggregate storage sheds and silos and a laboratory.

Bare Ground (ED2)

Bare ground was present in scattered locations within the Landownership Boundary, typically occurring as narrow, unvegetated strips adjacent to access routes or separating other habitat types.

In the western portion of the Site, this habitat formed a transitional zone between an internal access road and adjacent scrub.

Further south, bare ground was noted as an informal pathway linking areas of hardstanding, likely the result of repeated disturbance and vehicular movement associated with quarry operations.

Dense Bracken (HD1)

Dense bracken (*Pteridium aquilinum*) was observed in several areas across the Site, most notably in patches surrounding existing scrub habitats and within a more extensive stand in the northern portion of the Site.

These areas were characterised by a thick, largely monocultural cover of dead or decaying bracken fronds, indicative of seasonal dieback and with very limited ground flora diversity. In the northern extent, signs of recent clearance were evident, with disturbed ground and flattened vegetation suggesting previous management works.

Grassy Verges (GS2)

This habitat was present along the access road to the macadam plant bordering the oak-birch-holly woodland and mixed broadleaved woodland. The species present were coltsfoot, bramble, soft shield fern (*Polystichum setiferum*), ribwort plantain, oxeye daisy, common rush (*Juncus effusus*), purple clover (*Trifolium pratense*), herb-robert (*Geranium robertianum*), winter heliotrope (*Petasites pyrenaicus*), foxglove (*Digitalis purpurea*), common polypody (*Polypodium vulgare*), black medick (*Medicago lupulina*), fringed willowherb (*Epilobium ciliatum*) and birdsfoot-trefoil (*Lotus corniculatus*). Pedunculate oak (*Quercus robur*) and grey willow (*Salix cinerea*) saplings had begun to establish in this habitat.

Marsh (GM1)

This habitat was identified within the central portion of the Site, directly adjacent to an area of wet grassland. This habitat occupied a shallow depression with seasonally wet soils and supported a community of hydrophilic and semi-aquatic species typical of marshy ground.

Characteristic marsh species identified here included water plantain (*Alisma plantago-aquatica*), lesser spearwort (*Ranunculus flammula*), water mint (*Mentha aquatica*), pennywort (*Hydrocotyle vulgaris*), fen bedstraw (*Galium uliginosum*) and marsh thistle (*Cirsium palustre*). Broadleaf cattail (*Typha latifolia*) was also dominant, occurring in denser stands toward the wettest central areas of the habitat.

Grey willow was present along habitat edges and within transitional zones where the marsh graded into wet grassland. Creeping buttercup and field horsetail (*Equisetum arvense*) were also frequently recorded in marginal areas and slightly drier microhabitats within the marsh.

Mixed Broadleaved Woodland (WD1)

Mixed broadleaved woodland was recorded primarily in the central and northeastern portions of the Site, typically bordering areas of artificial surfaces and forming a transition between more heavily disturbed ground and adjacent natural habitats. This woodland was distinguished from the surrounding scrub and immature woodland by the presence of more mature trees and a more developed canopy layer.

Canopy species included grey willow, hazel (*Corylus avellana*) and silver birch (*Betula pendula*), which together created a partially shaded environment conducive to a varied understorey flora. The understorey consisted of bramble, butterfly bush (*Buddleja davidii*), creeping buttercup, common polypody, St John's wort (*Hypericum perforatum*.) and foxglove. These species contributed to a diverse woodland ground layer and reflected the transitional nature of this habitat within the quarry landscape.

Oak-Birch-Holly Woodland (WN1)

This habitat was identified primarily in the southern portion of the Site, occurring along the southern boundary of the quarry access track, with smaller pockets also present atop the quarry cliff edge along the western boundary, within areas otherwise dominated by scrub and immature woodland. This habitat extended into the Landownership Boundary. This habitat comprises an established woodland on relatively undisturbed ground.

The canopy layer consisted predominantly of sessile oak (*Quercus petraea*), downy birch (*Betula pubescens*), beech (*Fagus sylvatica*), holly (*Ilex aquifolium*) and hazel, forming a relatively dense canopy structure.

The understorey supported a diverse range of woodland herb and shrub species, including bracken, bramble, gorse and wood rush (*Luzula multiflora*). Ferns such as soft shield-fern, hart's tongue fern (*Asplenium scolopendrium*) and wall fern (*Asplenium ruta-muraria*) were also recorded, typically occupying shaded banks or rocky outcrops. Herbaceous flora included wood sorrel (*Oxalis acetosella*), foxglove, goldenrod (*Solidago virgaurea*), saxifrage (*Saxifraga* spp.) and herb-robert (*Geranium robertianum*), which collectively contributed to the biodiversity of the woodland floor.

This habitat corresponds to an Annex I habitat listed under the EU Habitats Directive – Annex I Old Sessile Oak Woods with Ilex and Blechnum [91A0].

Other Artificial Lakes and Ponds (FL8)

A number of artificial ponds were recorded across the Site and Land Ownership Boundary, with the most notable concentrations located within the northern and central portions. These waterbodies varied considerably in size and depth, with some appearing shallow and possibly linked to past quarrying activities or surface water accumulation, while others were markedly deeper.

The margins of these ponds were often bordered by wet grassland or scrub habitats, creating transitional habitats that supported a range of hydrophilic and semi-aquatic vegetation. In

several instances, natural colonisation had occurred along pond fringes, contributing to habitat complexity and local biodiversity.

Recolonising Bare Ground (ED3)

Recolonising bare ground was identified primarily within the northeast portion of the Site. This habitat featured a diverse assemblage of early-successional and disturbance-tolerant species such as dandelion (*Taraxacum officinale*), yarrow (*Achillea millefolium*), bird's-foot trefoil (*Lotus corniculatus*), cat's-ear (*Hypochaeris radicata*) and creeping buttercup. These species are typically associated with recently disturbed substrates and nutrient-poor soils.

Shrub species such as gorse, bramble and saplings of grey willow were also present and indicate the early stages of scrub encroachment and vegetation succession. Various grasses, including creeping bent (*Agrostis stolonifera*), cock's-foot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), sweet vernal grass, red fescue (*Festuca rubra*) and common bent (*Agrostis capillaris*) were recorded throughout the habitat, contributing to a heterogeneous ground cover.

In addition, a range of flowering plants were identified, including ribwort plantain, common daisy (*Bellis perennis*), oxeye daisy, tufted vetch (*Vicia cracca*), hawkbit (*Leontodon* spp.), mayweed (*Matricaria* spp.), figwort (*Scrophularia* spp.), black medick, yellow trefoil, purple clover, germander speedwell (*Veronica chamaedrys*), rough hawkbit (*Leontodon hispidus*), colt's-foot (*Tussilago farfara*), foxglove and sheep's-bit (*Jasione montana*). These species reflect the transitional nature of the habitat and its high floristic diversity.

Tree and sapling species observed included downy birch and grey willow, with fuchsia (*Fuchsia magellanica*) also occasionally present. Ferns such as field horsetail were noted in patches of damper ground.

Toward the southern portion of this habitat, a gradual increase in surface gravel was noted, suggesting a transition into a more disturbed ground layer, consistent with artificial surfaces used as access tracks.

Scrub (WS1)

This habitat was recorded in small, scattered patches across the central and southern-middle portions of the Site. These areas were typically found on sloped or slightly elevated ground where soil conditions and disturbance allowed for encroachment by woody vegetation. The scrub was dominated by gorse, bracken, bramble and silver birch with frequent occurrences of grey willow and occasionally eared willow (*Salix aurita*). This habitat often formed a transitional zone between open ground and more established woodland or grassland areas.

Scrub / Immature Woodland (WS1 / WS2)

Scrub and immature woodland were dominant habitats within the northern portion of the Site. These two habitats formed a mosaic of woodland and dense scrub.

The canopy layer included tree species such as sycamore (*Acer pseudoplatanus*), beech, pedunculate oak, rowan (*Sorbus aucuparia*), downy birch and silver birch. These species were generally present as saplings or young trees, reflecting the early development stage of the woodland.

The scrub layer was dominated by species such as grey willow, bramble, gorse, butterfly bush and traveller's joy (*Clematis vitalba*). These species formed dense thickets, suppressing ground flora and preventing the growth of a mature woodland.

Stands of Japanese knotweed (*Reynoutria japonica*) were identified in the eastern-most portion of this habitat, bordering an area of recolonising bare ground.

Grasses were generally sparse but present in open patches, including species recorded in adjacent habitats, such as creeping bent, Yorkshire fog, sweet vernal grass and red fescue.

Ruderal and disturbance-tolerant species were also scattered throughout the habitat, including ivy (*Hedera helix*), herb-robert and wild strawberry (*Fragaria vesca*), indicating anthropogenic influence.

The understorey flora, limited by shading in denser areas, included oxeye daisy, ribwort plantain, dandelion, common polypody and germander speedwell. These species were present in more open zones of the habitat.

Wet Grassland (GS4)

Wet grassland was identified primarily in the northeastern portion of the Site, directly adjacent to a marsh habitat, with small, fragmented patches also present in the eastern section. This habitat was indicated by seasonally waterlogged soils and supported a diverse mix of hydrophilic grasses, sedges and broadleaved herbs.

Grass species recorded included creeping bent, sweet vernal grass, red fescue, common bent and Yorkshire fog, forming a variable but generally dense sward across much of the habitat.

Common rush and sharp-flowered rush (*Juncus acutiflorus*) were dominant in wetter areas and contributed to the habitat's tussocky structure.

Forb species included ribwort plantain, tormentil (*Potentilla erecta*), heath bedstraw (*Galium saxatile*), sow thistle (*Sonchus* spp.) and bull thistle (*Cirsium vulgare*). Notably, a minimum of 29 flowering individuals of early marsh orchid (*Dactylorhiza incarnata*) were recorded throughout this habitat, significantly enhancing its botanical value and indicating favourable conditions for orchid establishment.

Bramble was observed encroaching in places, particularly at habitat edges where conditions were slightly drier.

Overall, the wet grassland on-site habitats were species-rich, providing valuable connectivity between wetter areas, such as marsh and drier grassland and scrub communities elsewhere on the Site.

5.2.2 Habitats Recorded within the Land Holding

Dry Siliceous Heath (HH1)

Dry heath was recorded along the northern boundary of the Landownership Boundary, with additional patches identified in the northeast corner. This habitat was not part of the Site. This habitat was characterised by a dominance of dwarf shrub species and is considered of ecological value due to its structural diversity and sensitivity to disturbance.

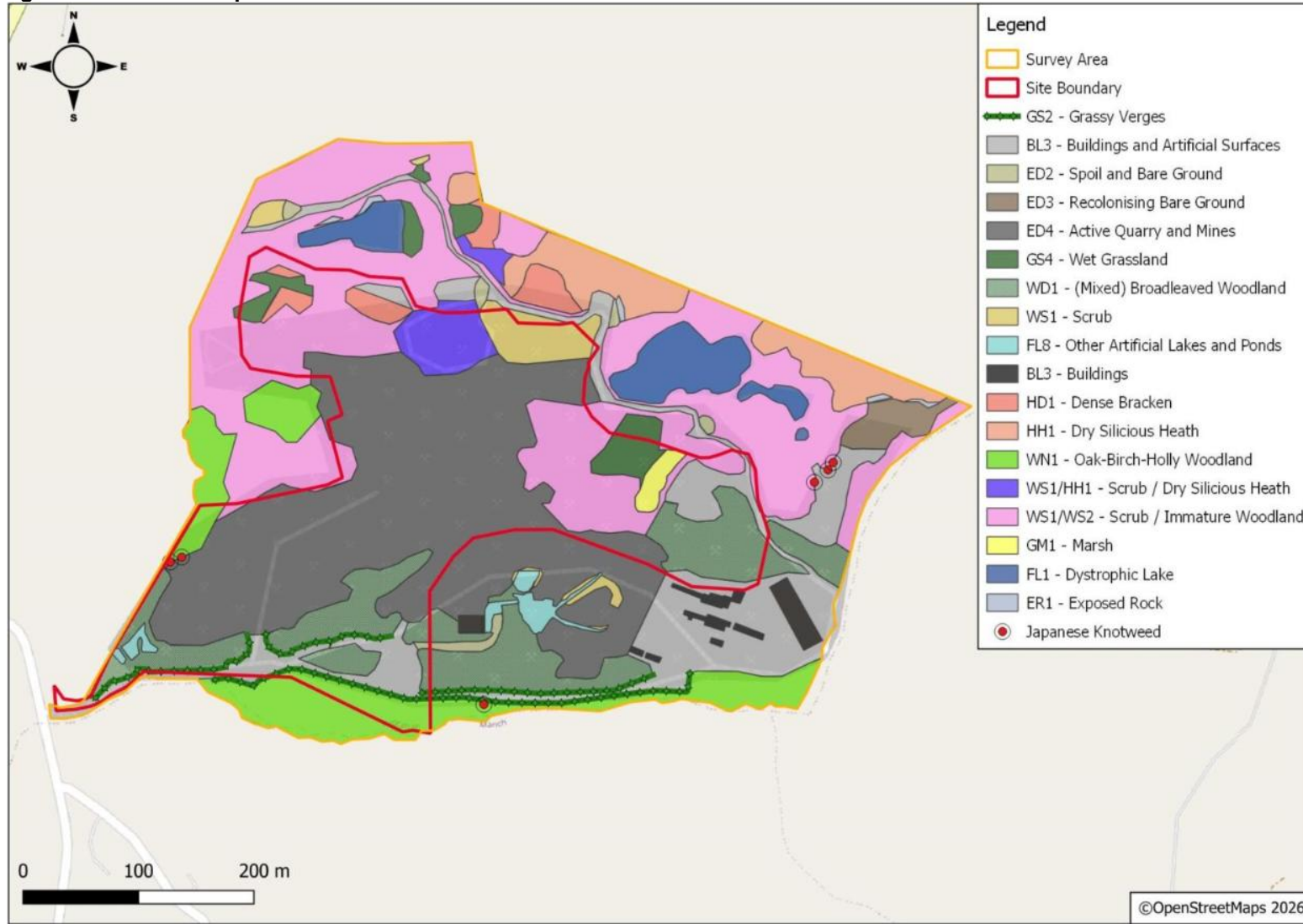
The habitat was dominated by gorse (*Ulex europaeus*), bell heather (*Erica cinerea*), ling heather (*Calluna vulgaris*) and cross-leaved heath (*Erica tetralix*), forming a patchy but well-established low shrub layer. Bramble (*Rubus fruticosus*) was present throughout, generally occurring at habitat edges or within more open patches.

Juniper haircap (*Polytrichum juniperinum*) was also frequently recorded across the habitat, particularly in areas of shallower substrate or exposed mineral soil.

One discrete stand of invasive rhododendron (*Rhododendron ponticum*) was identified within the northernmost occurrence of this habitat, located near the northern Site boundary. Its presence is considered locally significant given the potential for further spread and potential suppression of native heath flora.

This habitat corresponds to an Annex I habitat listed under the EU Habitats Directive – Annex I European Dry Heaths [4030].

Figure 5-1: Habitat Map



5.2.3 Species

5.2.3.1 Aquatic Survey

The NBDC held no records for freshwater pearl mussel within 2km of the Site [16]. However, as the Bandon River SAC is designated for freshwater pearl mussel, specialist biological assessments of the Bandon River were undertaken by Sweeney Consultancy. The survey identified 1,008 freshwater pearl mussels within the Bandon River in 2024, within close proximity to the Site. Detailed results from the assessments can be found in Appendix A: Freshwater Pearl Mussel Report.

5.2.3.2 Invasive Species

The NBDC held records for two invasive species within 2km of the Site – Japanese knotweed and rhododendron [24].

Japanese knotweed and rhododendron are both non-native, high-impact plant species that are subject to restrictions under Regulations 16(1) and 17 of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374/2024) [18]. Japanese knotweed was identified on-site and in the wider landholding, whilst rhododendron was identified only in the wider landholding.

Four medium impact invasive species – sycamore, butterfly bush, traveller's joy and winter heliotrope – were also identified on the Site during the surveys. These species are not currently regulated in Ireland.

6 STAGE 1 SCREENING: IDENTIFICATION OF POTENTIAL SIGNIFICANT IMPACTS

6.1 Potential Significant Impacts

The potential for significant effects on the Bandon River SAC were considered further in this section. The key output of this stage of the assessment is the identification of likely significant effects of the Proposed Development alone and in combination with other plans and projects on relevant European sites without the implementation of mitigation measures.

Table 6-1, Table 6-2 and Table 6-3 present further details and rationale of the screening assessment undertaken for each of the European sites identified as having the potential to be significantly affected by the Proposed Development, in light of their site conservation objectives and best scientific knowledge.

Table 6-1: Screening Assessment: Annex I Habitats – Bandon River SAC

Qualifying Feature of Interest	Baseline	Potential Significant Effects	Screening Rationale	Screening Conclusion
<p>Water courses of plain to montane levels with <i>the Ranunculion fluitantis</i> and <i>Callitricho - Batrachion</i> vegetation</p>	<p>The distribution of this habitat throughout this SAC is currently unknown [25].</p> <p>However, according to the Conservation Objectives of the Bandon River SAC, bryophyte assemblages are known to occur within the SAC. <i>Ranunculus</i> species are known to occur within the River Bandon and River Caha, which are located, at their closest points, ca. 315m southwest and ca. 360m northwest of the Site, respectively [1].</p>	<p>Effects associated with pollution during the Construction, Operational and Decommissioning / Remediation Phases of the Development. Decrease in water quality.</p> <p>Impacts associated with the spread on Japanese knotweed.</p>	<p>Given the proximity of the Site to the Rivers Bandon and Caha, there is potential for this habitat to be impacted, either directly or indirectly, during the Construction, Operational and Restoration phases of the Proposed Development as a result of suspended solids, silt or hydrocarbons entering the unnamed watercourse via on-site runoff or via the discharge locations around the Site.</p> <p>Therefore, mitigation measures will be implemented as part of the proposed works in order to ensure that no adverse effects occur to this habitat regarding water quality impairment.</p> <p>Japanese knotweed is a highly invasive, non-native perennial plant species that is widely recognised for its aggressive growth characteristics and its capacity to cause significant ecological and environmental harm, particularly within riparian areas.</p> <p>Given the presence of Japanese Knotweed within close proximity to the proposed works areas, there is potential for the works to cause the unintentional spread of this species. This could result in adverse impacts to both the riparian and river habitats.</p> <p>Therefore, mitigation measures will be implemented as part of the proposed works in order to ensure that no adverse effects occur to this habitat as a result of the spread of this species.</p>	<p>Screened In</p>
<p>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion</i>)</p>	<p>Alluvial forests are woodlands found along river floodplains that require periodic flooding. According to the NPWS Conservation Objectives Report, this habitat is present ca. 2.7km downstream of the Site. [25]. This habitat was not</p>	<p>Effects associated with pollution during the works, Construction, Operational and Decommissioning /</p>	<p>Given the proximity of the Site to this habitat, it is considered that should any potential pollutants run off from the Site and reach the habitat, specifically should hydrocarbons enter the watercourse, the conservation status of this habitat could potentially</p>	<p>Screened In</p>

Qualifying Feature of Interest	Baseline	Potential Significant Effects	Screening Rationale	Screening Conclusion
<i>incanae, Salicion albae</i> *)	identified onsite or in the immediate vicinity of the Site.	Remediation Phases of the Development. Decrease in water quality. Impacts associated with the spread on Japanese knotweed.	be adversely affected. The risk of adverse effects are considered low based on the distance separating the Site from this habitat. However, based on precautionary basis and standard best practice, mitigation measures will be implemented as part of the proposed works in order to ensure that no adverse effects occur to this habitat regarding water quality impairment. Unintentional spread of Japanese knotweed – as above.	

Table 6-2: Screening Assessment: Annex II Species for the Bandon River SAC

Qualifying Feature of Interest	Baseline	Potential Significant Effects	Screening Rationale	Screening Conclusion
Freshwater pearl mussel (<i>Margaritifera margaritifera</i>)	The NBDC held no records for this species within 2km of the Site [16]. However, according to the NPWS Conservation Objectives Report, the Site falls within the catchment area of this species [25]. The Site is also located within a <i>Margaritifera</i> sensitive area (Bandon/Caha).	Effects associated with pollution during the works, Construction, Operational and Decommissioning / Remediation Phases of the Development. Decrease in water quality.	This species is susceptible to water quality, and any impacts on water quality could adversely impact this species. Although the NBDC held no records for this species within 2km of the Site, this species is known to occur within the vicinity of the Site. As outlined in the Freshwater Pearl Mussel Report (attached as Appendix A), the surveys conducted in 2023 and 2024 found a maximum count of 1,008 freshwater pearl mussels in the River Bandon downstream of where the boundary stream discharges into the river. Given that the Site falls within the catchment area of this species, there is potential for negative impacts to occur as a result of pollution events during the Construction and Operational Phases. Furthermore, this species is reliant on migratory fish species for reproduction, which also have the potential to be negatively impacted by water quality impairment caused by the Proposed Development.	Screened In

Qualifying Feature of Interest	Baseline	Potential Significant Effects	Screening Rationale	Screening Conclusion
			Therefore, this species has been screened in for further assessment and water quality mitigation measures will be incorporated into the works.	
Brook Lamprey (<i>Lampetra planeri</i>)	<p>The NBDC held no records of brook lamprey within 2km of the Site [16].</p> <p>However, according to the Inland Fisheries Ireland (IFI) Bandon River Catchment 2021 Survey Report, lamprey species were identified at 8 of the 35 survey sites within the following sub-catchments: Brewery, Bealanscartane, Ballynacarriga, Bandon Lower and Enniskean [26].</p> <p>Although this report does not contain information for the Bandon_SC_010 sub catchment (containing the Site), the report does confirm the presence of lamprey species within the Bandon Catchment to the south of the Site (the Bealanascartane River discharges into the Bandon River ca. 6km downstream of the Site).</p> <p>Suitable habitats are not present for this species within the Site but lamprey species may utilise the adjacent stretch of the Bandon River.</p>	Effects associated with pollution during the works, Construction, Operational and Decommissioning / Remediation Phases of the Development. Decrease in water quality.	<p>Although this species has not been recorded within 2km of the Site, this species has been recorded within rivers that discharge into the Bandon River, which is directly adjacent to the Site.</p> <p>Given the proximity of the Site to the Bandon River, there is potential for impacts to occur as a result of pollution during the Construction, Operational and Decommissioning / Remediation Phases of the Proposed Development.</p> <p>Therefore, water quality mitigation measures will be incorporated into the works, and this species has been screened in for further assessment.</p>	Screened In

6.2 Stage 1 – Analysis of ‘In-Combination’ Effects

The Habitats Directive requires competent authorities to make an appropriate assessment of any plan or project which is likely to have a significant effect alone or in-combination with other plans and projects.

A review of Cork County Council [14] and the EIA planning portal [27] did not identify any current or previously granted plans or projects in the immediate vicinity of the Proposed Development that are considered likely in-combination with the Proposed Development to result in significant impacts on the Bandon River SAC. However, the following applications have been previously assessed by Cork County Council within the planning system, all of which are located within the vicinity of the Site:

- A planning application was submitted to CCC by Keel Energy Ltd. for a 10 year permission for a 110Kv substation, control buildings and underground electricity cabling connecting the proposed substation to a previously permitted Carrigarierk Wind Farm (ABP Reference: PL04.246353, CCC Ref: 15/730) and all associated site works. However, it is expected that works have already been completed. Due to the location of the permitted windfarm, ca. 14km north of the Proposed Development, and the localised nature of underground cabling, it is unlikely that these works would have any in-combination effects with the Proposed Development. An EIAR and NIS were submitted in conjunction with this planning application and the planners report concludes that “*There is no objection to permission being granted with the attachment of the following conditions: a final CEMP shall be submitted for approval by the Planning Authority, the developer shall implement the Invasive Species Management Plan as submitted and works at the substation may only be commenced following issuance of a Wildlife Act Derogation License for Kerry Slug*”. Planning Ref: 17/431. Conditional planning was granted on 16/04/2018;
- A planning application was submitted to CCC by Michael O’Mahony for the demolition of an existing dwelling and out-buildings and the construction of a one and a half storey dwelling, treatment unit and all associated site works. Planning Ref: 13/430. Planning was granted on 09/09/2013;
- A planning application was submitted to CCC by Jerry Murray for the construction of a milking parlour, dairy plant room, office, two roofed cattle holding yards, soiled water tank, feed storage bin and all associated site works. Planning Ref: 20/659. Conditional planning was granted on 15/01/2021; and,
- A planning application was submitted to CCC by Paul Henry Hanahan for the construction of a dwellinghouse and domestic garage. Planning Ref: 12/644. Planning was granted on 05/12/2012.

Other planning applications related to commercial developments/lands at Ardcahan Quarry and adjacent lands were also noted: Reg. Refs. 19/778; 07/1842; 01/1767; 07/1454; 01/6308; 07/2198; 05/6524; 06/2148; 06/2314; 07/628; 06/1687; 07/1286; 07/993; 13/326; 13/164; 13/346; 08/501; 01/4868; 09/574; 04/4445; 09/267 and 03/3345.

It is considered that the Proposed Development is unlikely to have any significant in-combination contribution to possible significant effects on the Bandon River SAC with the above-listed projects. This statement is supported by:

- The localised nature of the proposed works and the granted permissions above;
- The distance separating the Site from the location of the granted permissions above;

- The dilution factor between the Sites and the locations of the granted permissions above;
- The mitigation measures that will be put in place; and,
- The best practice guidelines, which will be implemented throughout all phases of the Proposed Development.

However, as identified in Section 6.1, a number of qualifying features require further consideration and appropriate mitigation measures to ensure that the Proposed Development alone will not lead to in-combination effects with any proposed future developments.

6.3 Stage 1 – AA Screening Conclusion

A detailed assessment of the layout and nature of the Proposed Development, the construction methods to be employed and the overall activities that will occur at the Site during Construction, Operation and Decommissioning / Remediation Phases has been carried out and the potential for significant effects on European sites and qualifying features of interest within the zone of influence of the Site has been examined in detail.

The boundaries of two designated sites, the Gearagh SAC and the Gearagh SPA, were screened out, given the distances separating the Site from these European sites and the lack of impact pathways. It could be objectively concluded that the Proposed Development will not, either alone or in combination with other plans or projects, be likely to have significant effects on those sites.

However, the Bandon River SAC is located ca. 10m west of the Site, and there is a hydrological connection between the Site and the River. Therefore, this SAC was taken forward for further detailed consideration, Stage 2 appropriate assessment. Using professional experience, guidance and judgement, the following factors have been taken into account on identifying potential significant effects on the identified European site:

- Qualifying interests;
- Special conservation interests;
- Conservation objectives;
- The nature of the onsite habitats; and,
- The location of the Site.

The screening process has examined the potential for the Proposed Development to cause significant effects on European sites and the qualifying features of interest as per the screening determination in Section 4.

Based on the above factors and taking a precautionary approach, the screening exercise has identified the following designated habitats and species as potential receptors of significant likely effects as a result of the Proposed Development, in the absence of appropriate mitigation:

Habitats

- Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation;
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*; and,
- Species
 - Freshwater pearl mussel
 - Brook lamprey.

Therefore, the European sites associated with these qualifying features of interest have been brought forward for further consideration.

Therefore, progression to Stage 2 of the Appropriate Assessment process is required in the light of current case law on mitigation measures.

Section 7 below further addresses potential issues arising from the Proposed Development and the mitigation measures required to negate any potential significant likely effects on this European Site.

7 STAGE 2 NIS

7.1 Assessment of Potential Significant Effects

This section provides recommendations for measures which will mitigate against any adverse effects on the integrity of the identified European site as a result of the Proposed Development. The following effects with the potential to adversely affect the conservation objectives of the Bandon River SAC were considered:

- Potential loss of or disturbance to designated habitats during the Construction, Operational and Decommissioning / Remediation Phases;
- Potential impairment of air quality during the Construction, Operational and Decommissioning / Remediation Phases;
- Potential impairment of water quality during Construction, Operational and Decommissioning / Remediation Phases; and,
- Potential Adverse Effects Associated with the Unintentional Spread of Japanese Knotweed

7.1.1 Loss of or Disturbance to Designated Habitats during the Construction, Operational and Decommissioning / Remediation Phases

No works will take place within the River Bandon SAC. However, the Proposed Development has the potential to degrade habitats for which the River Bandon SAC is designated. These changes may manifest as increased silt runoff, nutrient release or runoff of pollutants or dust.

These impacts rely on a direct pathway between the Site and the Bandon River SAC. As discussed in Section 3.2, there is a direct hydrological connection via surface discharge to the stream, which feeds into the Bandon River. In addition, the boundary stream present along the eastern and southern boundary of the Site is also a tributary of the Bandon River SAC. As part of the Proposed Development, a water management system is to be installed, as detailed in Section 3.3, including a controlled discharge to the stream. Therefore, a direct pathway exists between the Site and the Bandon River SAC.

Mitigation will be implemented to reduce the risk of degradation to habitats for which the River Bandon SAC is designated. These are outlined in Sections 7.1.3.1 and 7.1.3.2, below.

7.1.2 Potential Impairment of Air Quality during the Construction, Operational and Decommissioning / Remediation Phases

Construction-related activities associated with the Proposed Development have the potential to result in temporary adverse effects on local air quality, primarily through the generation of dust and emissions from machinery, vehicle movements and ground-disturbing works. These effects are typically short-term in nature and are most likely to occur during periods of dry weather and intense activity, such as topsoil stripping and initial excavation. However, standard best practice measures will be implemented throughout the Construction, Operational and Decommissioning / Remediation Phases, including dust suppression via wet methods, restriction of vehicle speeds, and regular maintenance of plant and equipment to limit emissions.

It should be noted that the Site lies approximately 10m east of the Bandon River SAC, with a direct hydrological connection via the boundary stream along the eastern and southern boundary. In addition, there will also be a stormwater discharge from the Site's water management system. While dust is not typically transported via water, indirect deposition of airborne particulates into the watercourse could occur during the Construction, Operation and Decommissioning / Remediation Phases of the Proposed Development if not properly

managed. To address this, the following mitigation measures will be implemented as part of the Construction Phase, Operational and Decommissioning / Remediation Phases of the Proposed Development, as per the measures in Chapter 8: Air Quality of the EIAR:

- *'Site roads will be dampened using wet methods during dry periods, particularly during summer months;*
- *Inspection, sweeping and cleaning of site roads and adjoining public roads will be undertaken on a regular basis, minimum every other day. A road sweeper will be utilised if required;*
- *All fine materials will be covered when leaving the site to prevent dust escaping;*
- *Aggregates will be stored in an enclosed shed once processed;*
- *Speeds restrictions will in place on site. Speeds will be reduced to a maximum of 20kmph;*
- *Drop heights will be minimised when handling material;*
- *The perimeter natural vegetation and screening mounds will be maintained to allow for natural screening of dust from nearby receptors;*
- *Idle times will be reduced by providing an efficient material handling plan that minimises vehicle wait time;*
- *Regular maintenance of plant and equipment will be undertaken to ensure they will perform the most efficiently; and,*
- *Traffic management measures will be implemented.'*

In addition, as detailed in Section 3.6.3, monitoring works will be implemented as part of the Proposed Development.

Given these measures and the localised nature of dust emissions, it is concluded that air quality impacts associated with the Proposed Development will not adversely affect the integrity of the Bandon River SAC in light of the Site's conservation objectives.

7.1.3 Potential Impairment of Water Quality during the Construction, Operational and Decommissioning / Remediation Phases

Under the WFD, the Bandon River is considered to be *'at risk'*, and according to the most recent available WFD report, this catchment is subject to anthropogenic and agricultural water quality pressures [28]. Should potential pollutants from the Site enter the Bandon River via the boundary stream adjacent to the Site or via the discharge location at the wash plant, this could have an adverse effect on water quality within the Bandon River SAC. Potential pollutants resulting from the Proposed Development include suspended solids, silt and hydrocarbons.

Sediment and silt have the potential to clog fish gills, degrade spawning habitats and cover / smother aquatic vegetation. Therefore, these pollutants could directly affect aquatic species. In addition, hydrocarbons have the potential to alter the chemical balance of a waterbody and are persistent in the environment, potentially proving toxic to freshwater pearl mussel and brook lamprey. These species are known to be highly sensitive to environmental changes. Hydrocarbons also supply nutrients for adapted micro-organisms, which can rapidly deplete dissolved oxygen in waters, resulting in the death of aquatic organisms.

Considering the proximity of the Site to the Bandon River SAC and the presence of a direct impact pathway via the boundary stream, mitigation measures will be implemented during the Construction and Operational Phases of the Proposed Development to ensure there is no

potential for the release of pollutants from the Site to the boundary stream and subsequently the Bandon River SAC.

7.1.3.1 Reduction & Prevention of Suspended Solids and Contaminant Pollution

During the Construction Phase, vegetation will be cleared, and overburden will be stripped from the proposed extraction area. These works will be intermittent and will not be completed all at once. The soil removed during these works will be used to create soil embankments. These works have the potential to result in the release of suspended sediments to downstream watercourses, including the boundary stream and the Bandon River, which forms part of the Bandon River SAC.

To prevent the release of suspended sediments to the boundary stream and subsequently, the Bandon River SAC, the following mitigation measures will be implemented:

- Strict control of sediment/dust generation and other pollutants, such as hydrocarbons associated with the site clearance, rock excavation, blasting, crushing, aggregate washing, stockpiling, process HGV and transport machinery use will be implemented at the Site;
- The deposition of cleared soils, unsuitable rock or segregated silt materials will be at least 15m away from the watercourse to maintain a suitable buffer area. Vegetation of any stockpiled soils or material used in berms will commence as soon as possible after deposition to reduce sediment erosion;
- The existing stormwater attenuation pond in the southwestern corner of the Site, which is located down gradient of the proposed excavation area, will be enhanced by raising the berm and installing a weir sluice system to prevent direct surface water runoff to the adjacent watercourse, thereby offsetting both the potential hydraulic and water quality impacts of the development. This attenuation area will be established at the start of the work and will remain in place for all subsequent quarrying and the decommissioning phases and into the long term;
- The attenuation system is designed to cater for a 100yr storm event +15%, for the full 8.3Ha extent of the final Phase 1 to 3 quarry catchment area and will therefore be oversized for the majority of the excavation works when the working catchment will be below 8.3 Ha in area;
- Maintenance and management of the pond areas will maintain capacity, prevent peak flows from going to the local stream, which will help mitigate any adverse high river flows and downstream flood risks;
- Site activities such as rock crushing, aggregate washing and stockpiling are to be established over 80m from the attenuation pond system;
- The large attenuation pond J in the SW corner of the site will allow for an additional reduction in fine sediments, nutrients and toxicants and maintain the existing percolation to ground and runoff characteristics of the site by providing suitable storage for a return period of up to 1 in 100 years;
- Environmental controls such as the use of dedicated refuelling areas for quarry plant and the use of dip trays under temporary fuel bowsers and/or crushers, and the maintenance of all vehicles and equipment used on site will prevent the release of hydrocarbons around the Site;
- Bunds sufficiently large to fully contain accidental spills will be provided around all tanks / storage areas containing harmful substances;

- Construction traffic will travel along designated internal roads constructed of hardcore rock material or on bedrock so that exposed areas of bare ground are not made muddy or soft due to movements of quarry traffic around the site. Machinery will be parked in designated areas;
- Crash barriers with a concrete verge are to be installed in areas of the site where the internal access roads are directly adjacent to the small watercourse. This will reduce the risk of surface waters washing from the road into the stream and prevent vehicles from crashing into the stream;
- The area of the macadam plant behind the aggregate store (upstream sample location) and the section of the sites access road just inside the main gate (downstream sample location) are locations where such a traffic management mitigation measure would be relevant;
- Proper maintenance of the attenuation pond water control and interceptor system will ensure that the installed equipment continues to operate successfully, and this should be undertaken in accordance with CIRIA Guidelines C697 [29]. Maintenance will include general examination and cleaning, where required, of the drainage system, maintenance of the attenuation pond sluice weir and the interceptor separator;
- Damping down of the roadways and stockpiles using water bowsers and mist sprayers will be used during dry periods to reduce the potential for dust generation around the site and on the tarred access road to the site; and,
- Good practice guidelines for the quarry industry will be followed, such as the ICF Environmental Code (2nd Edition 2005) [30], EPA Environmental Guidance for the Extractive Industry [19] and the UK Environmental Agency Pollution Prevention Guidelines – PPG1 to PPG8 [31].

Additionally, the following best practice guidelines will be followed, which are based on Inland Fisheries Ireland [32] and NRA, now known as TII, [33] guidance documents:

- Construction stage works will be undertaken in accordance with an approved Construction Environmental Management Plan ('CEMP');
- All plant and machinery will be serviced before being mobilised to the Site;
- Preventative maintenance and relevant maintenance logs will be kept for all on site plant and equipment;
- All materials shall be stored at the main contractor compound and transported to the works zone immediately prior to construction;
- Where drainage ditches are crossed, the release of sediment over baseline conditions will be prevented by the use of silt traps, check dams and / or bunds. These will be put in place in advance of construction works and monitored on a regular basis;
- No surface water runoff will be discharged onto public roads, foul sewers or adjacent property;
- Weather conditions will be considered when planning construction activities to minimise risk of run off from the Site;
- Provision of exclusion zones and barriers between any stockpiled materials and any surface water features to prevent sediment washing into the receiving water environment;

- Entry by plant, equipment, machinery, vehicles and construction personnel into watercourses, wet drainage ditches or the river riparian zones shall not be permitted;
- Emergency response procedures will be put in place;
- All concrete pours will be carefully planned to avoid any impacts;
- Any pouring of concrete will only be carried out in dry weather. Washout of concrete trucks will not be permitted on the Site;
- Chemicals used will be biodegradable where possible;
- Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening;
- Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete;
- Surplus concrete will be returned to the batch plant or off-site concrete wash facility after completion of a pour;
- Any spillage of cementitious materials will be cleaned up immediately; and,
- Measures will be implemented to minimise waste and ensure correct handling, storage and disposal of waste.

Additionally, an ECoW will be appointed to the project to ensure that the mitigation and best practice measures will be implemented.

Furthermore, as detailed in Section 3.6.2, water monitoring will be undertaken as part of the Proposed Development.

It can therefore be concluded that with the implementation of the above mitigation measures, the Proposed Development will not have any adverse effects on the water quality within the boundary stream or the Bandon River as a result of suspended sediments. Subsequently, there will be no significant likely effects to qualifying features of interest within the Bandon River SAC.

7.1.3.2 Potential Release of Hydrocarbons / Chemicals during Operations

Accidental spillage during refuelling of excavation plant with petroleum hydrocarbons is a significant contamination risk to surface water. The accumulation of small spills of fuels and lubricants during routine plant use can also be a contamination risk. Therefore, a pathway exists between the Site and Bandon River SAC via the existing Site drainage network.

Nonetheless, the following mitigation measures will be implemented as part of the Proposed Development to control hydrocarbons and chemical usage on the Site and to minimise as far as possible the risk of accidental release of these pollutants to surface water:

- Continued operation and maintenance of the existing bunds and hydrocarbon interceptor will occur;
- Adherence to any discharge limits relevant statutory bodies or authorities may impose for the Proposed Development;
- Regular maintenance and emptying of the hydrocarbon interceptor as per the manufacturer's recommendations will be implemented;
- All plant and machinery will continue to be regularly serviced before being used on site;

- Refuelling will continue to be completed in a controlled manner using drip trays at all times;
- Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water;
- Fuel and oil containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile stores;
- Containers and bunding for storage of hydrocarbons and chemicals will have a holding capacity of 110% of the volume to be stored. This is the case for the existing on-site bunds;
- Fuel and oil stores, including tanks and drums, will be regularly inspected for leaks and signs of damage;
- Drip-trays will be used for fixed or mobile plant, such as pumps and generators, in order to retain oil leaks and spills;
- Only designated trained operators will be authorised to refuel the mobile plant on site;
- Procedures and contingency plans will be set up to deal with emergency accidents or spills;
- An emergency spill kit will be kept on-site for use in the event of an accidental spill in the quarry floor; and,
- All water discharged during the Operational Phase will be subject to any monitoring and discharge requirements imposed by relevant statutory bodies or authorities.

The highest standards of site management will continue to be maintained, and the utmost care and vigilance will be followed to prevent accidental contamination or unnecessary disturbance to the Site and surrounding environment during the operation of the Proposed Development.

It can therefore be concluded that with the implementation of the above mitigation measures, the Proposed Development will not have any adverse effects on the water quality within the Bandon River as a result of hydrocarbon or chemical release. Subsequently, there will be no significant likely effects to qualifying features of interest within the Bandon River SAC.

7.1.4 Potential Adverse Effects Associated with the Unintentional Spread of Japanese Knotweed

The accidental / unintentional spread of Japanese Knotweed during the Construction, Operational and Decommissioning / Remediation Phases of the Proposed Development poses a potential significant risk of adverse effect to both on-site habitats and habitats for which the River Bandon SAC is designated. A Japanese Knotweed ('JK') Management Plan has been prepared for the Site (Please See Appendix C), which include measure the control and remediation of the Japanese Knotweed at the Site. The works include the following migration measures:

7.1.4.1 Site Preparation

Prior to any remediation works being undertaken, the following preparation actions will be required to limit the potential for any further spread of JK:

- Infected areas should be cordoned off (with an adequate 7m buffer zone), and signage should be erected to prevent access. These works should be supervised by the project ECoW;
- No vegetation management works or earthworks should take place within areas identified as having JK present or within the buffer zones;
- No new material or soil should be stored adjacent to the JK area; and,
- No plant or machinery should be tracked through areas containing JK or within the 7m buffer zone.

7.1.4.2 Herbicide Treatment

It is recommended that herbicide treatment be undertaken within the Survey Area and cover all areas of identified JK before the end of the growing season, which is typically from the end of September to the start of October. Herbicide treatments are known to be very effective and cause significant dieback of JK. Herbicide treatments generally take between 3 and 5 years, with spot treatment required each year until no regrowth is observed.

The initial JK treatment should be undertaken as soon as practically possible and before the end of the growing season. This will allow the JK to draw as much herbicide as possible into the below-ground rhizomes. Following completion of the initial spray, this will then need to be followed up by a programme of regular spray treatments, comprising three treatments per year during the growing season for a period of three to five years.

Site Biosecurity Measures

In order to mitigate against the unintentional spread of invasive species, the following biosecurity measures should be implemented:

- All vehicles, machinery and any other equipment entering / leaving the Survey Area should be washed and cleaned before entering and leaving the Site to prevent the spread of invasive plant material;
- Before machinery or equipment is unloaded within the Survey Area, equipment will be visually inspected to ensure that all adherent material and debris have been removed; and,
- Any vehicles and machinery that are not clean will not be permitted entry to the Survey Area.

7.1.4.3 Monitoring

The treatment works should be supervised by the project ECoW. As part of these works, the project ECoW will also monitor the effectiveness of the treatment.

On-going monitoring should be undertaken by the project ECoW in conjunction with chemical treatment to provide effective control of this species, as knotweed rhizomes that have not been completely killed off may send up new shoots as many as three years later.

Continued monitoring with the Survey Area is required in order to limit any potential spread of species to ensure desired results are being achieved, and also to adapt remediation plans to improve success and treat any re-growth.

It can therefore be concluded that with the implementation of the above mitigation measures, the Proposed Development will not have any unintentional spread of Japanese knotweed. Subsequently, there will be no significant likely effects to qualifying features of interest within Bandon River SAC.

7.2 Stage 2 - Analysis of 'In-Combination' Effects

Based on the mitigation measures as described in Section 7.1, the Proposed Development alone will not have any direct or indirect adverse effects on the integrity of any European sites.

Following a review of the Cork County Council Planning Files [14], and the Department of Housing, Local Government and Heritage's planning portal – the National Planning Application Database as discussed in Section 6.2, no current or previously granted plans or projects were identified in the immediate vicinity that are considered to have the potential to have any in-combination with the Proposed Development to result in significant impacts on the integrity of European Sites.

It is therefore considered that the Proposed Development is unlikely to have any significant in-combination contribution to possible significant effects on the Bandon River SAC.

This statement is supported by:

- I. The localised nature of the proposed works;
- II. The mitigation measures that will be put in place; and,
- III. The best practice guidelines which will be implemented during the Construction and Operational Phase of the Proposed Development.

Taking the above into account and given the fact that the aforementioned projects will not result in any adverse effects to European sites, it can be concluded that the Proposed Development will not result in any in-combination contribution to adverse effects on the integrity of any European sites.

8 NIS CONCLUSIONS AND STATEMENT

A detailed assessment of the layout and nature of the Proposed Development, the construction methods to be employed and the overall activities that will occur at the Site during both the Construction, operational and Decommissioning / Remediation phases has been carried out and the potential for significant effects on European sites and qualifying features of interest within the zone of influence of the Site has been examined in detail.

As detailed in Section 6.3, the Stage 1 AA Screening conclusion states that the boundaries of two designated sites, the Gearagh SAC and the Gearagh SPA, were screened out. It can be concluded that the Proposed Development will not, either alone or in combination with other plans or projects, be likely to have significant effects on these European sites.

However, a hydrological connection was identified between the Bandon River SAC and the Site, via the discharge from the Site and also the boundary stream and the Bandon River, which forms part of the Bandon River SAC. Therefore, the Bandon River SAC was taken forward for further detailed consideration.

Avoidance, design requirements and mitigation measures are detailed within this NIS which will ensure that any impacts on the Bandon River SAC or any other European site, having regard to their conservation objectives, will be avoided during all phases of the Proposed Development, such that there will be no adverse effects on the integrity of any European sites.

Given the close proximity of the Site to the River Bandon SAC and the hydrological connection to the Bandon River, ongoing supervision and monitoring will be required to ensure that the mitigation measures are fully implemented.

Following an examination, analysis and evaluation of the relevant information, including the nature of the predicted impacts from the Proposed Development and all associated works, it has been objectively concluded that with the implementation of the proposed mitigation measures, the Proposed Development will not, either alone or in combination with other plans or projects, adversely affect the integrity or conservation status of any of the qualifying interests of the Bandon River SAC or any other European site in light of best scientific knowledge. No reasonable scientific doubt exists in relation to this conclusion.

Accordingly, progression to Stage 3 of the Appropriate Assessment process (i.e. Assessment of Alternatives Solutions) is not considered necessary.

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APPENDICES

APPENDIX A

Sweeney Consultancy

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Tel. 022 26780, 086 2263383

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Freshwater Pearl Mussel (*Margaritifera margaritifera*)
Survey of the River Bandon
at Ardcahan, Dunmanway, Co. Cork.

September 2024

Due to the sensitive nature of data concerning the locations of freshwater pearl mussels, distribution of this report should be restricted and not released to the public.

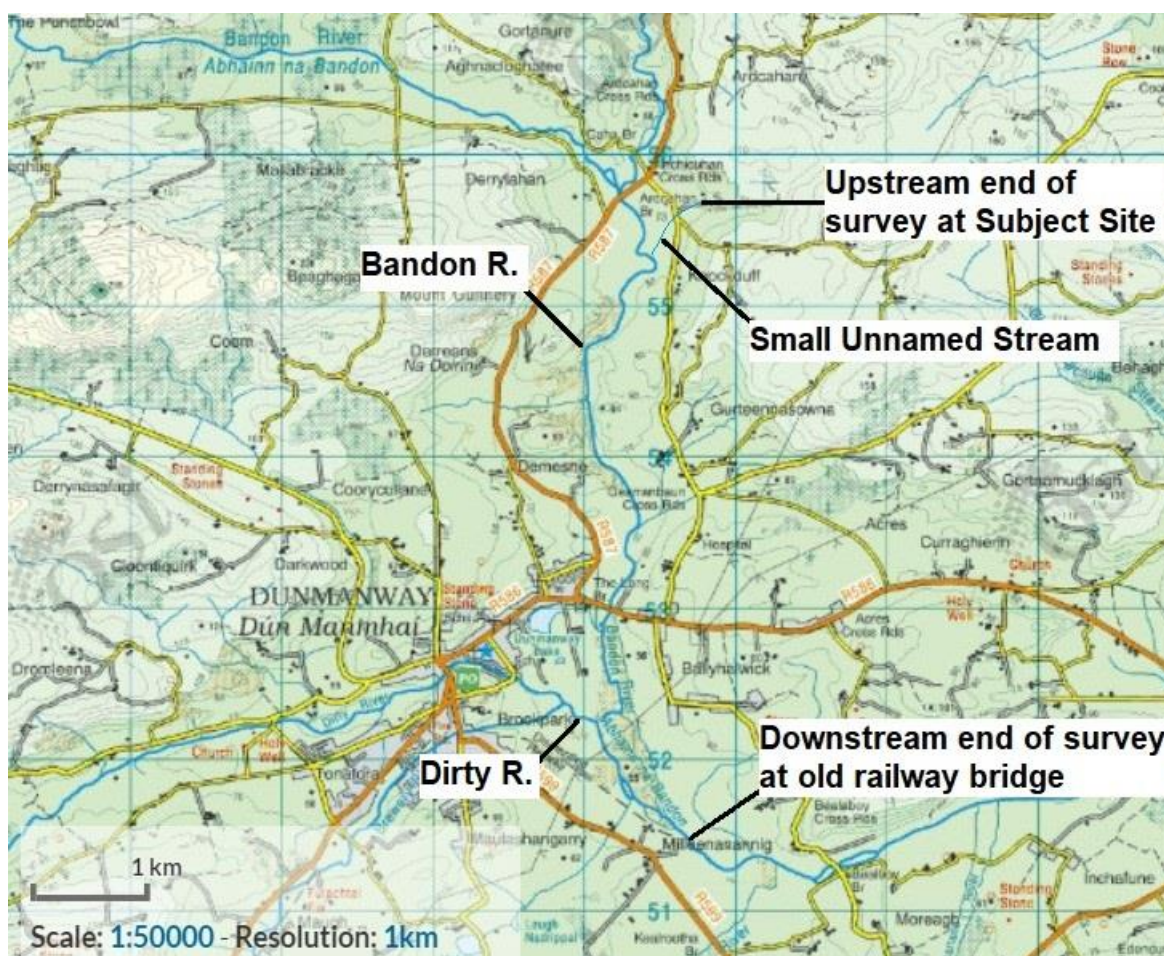
TABLE OF CONTENTS

		Page
SECTION 1	INTRODUCTION	3.
SECTION 2	METHODOLOGY	5.
SECTION 3	RESULTS	5.
SECTION 4	FURTHER INVESTIGATIONS & DISCUSSION	6.
APPENDIX 21	REFERENCES	7.

1. INTRODUCTION

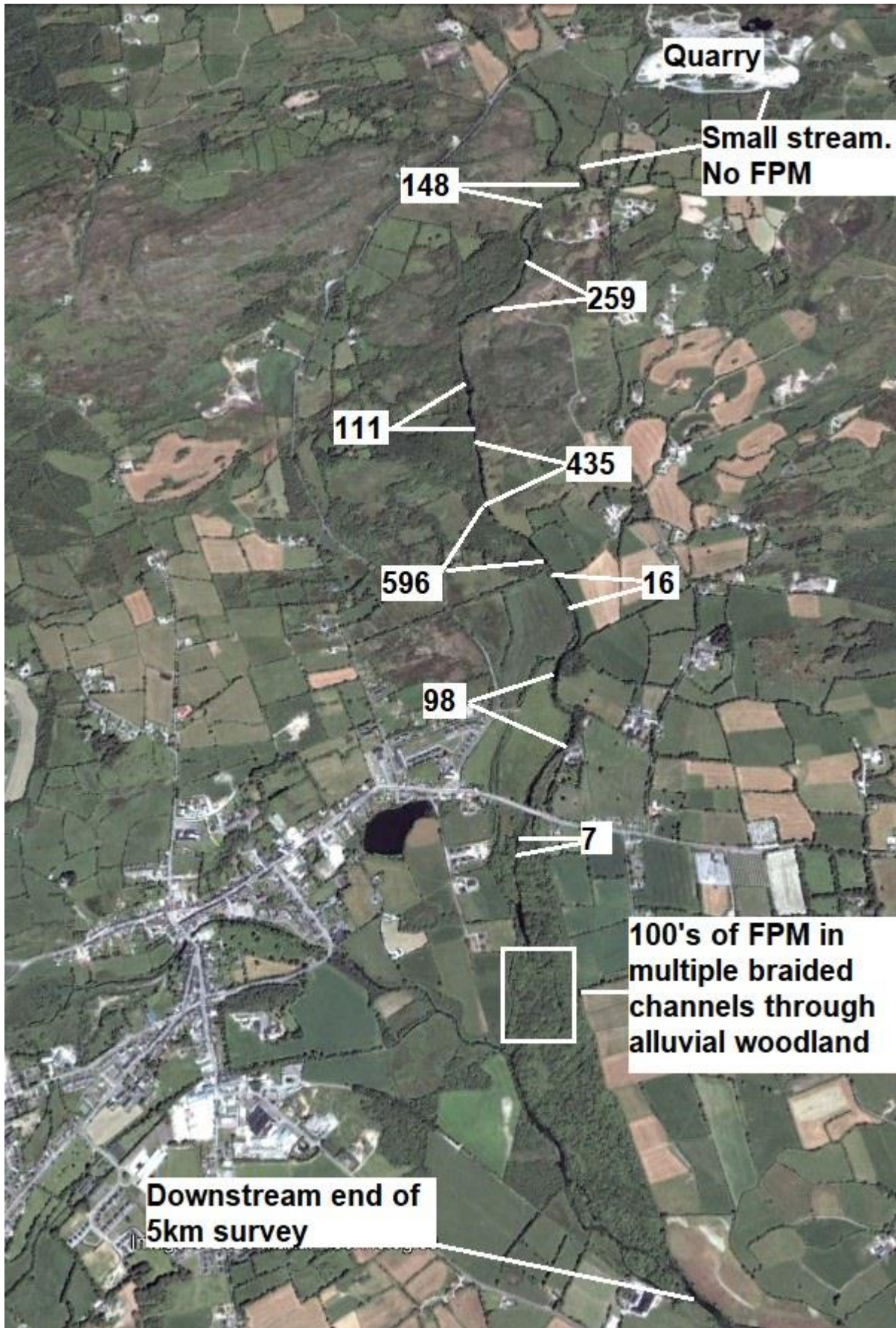
In June 2023, Sweeney Consultancy was commissioned by Malone O'Regan Environmental to undertake an aquatic ecological assessment, including a survey of Freshwater Pearl Mussels (*Margaritifera margaritifera*) downstream of a quarry at Ardcahan, Dunmanway, Co. Cork. As the aquatic zone of potentially highest impact is from the location of a proposed development to 5km downstream (Escauriaza *et. al.*, 2017), the section of watercourse assessed was from an unnamed small stream adjacent to the quarry site to the old railway bridge downstream of Dunmanway (Figure 1).

Figure 1. June 2023 Survey Location Map



The distance from the confluence of the stream from the quarry with the River Bandon (ITM 524406 555396) to the first Freshwater Pearl Mussel (FPM) downstream was c. 80m. From this point, at ITM 524438 655304 to ITM 524423 655268, 148 FPM were counted. (Figure 2). As the proposed development at the quarry site was delayed, Sweeney Consultancy was commissioned to re-survey this part of the River Bandon FPM population nearest the quarry.

Figure 2. Freshwater Pearl Mussel Locations and Numbers June 2023



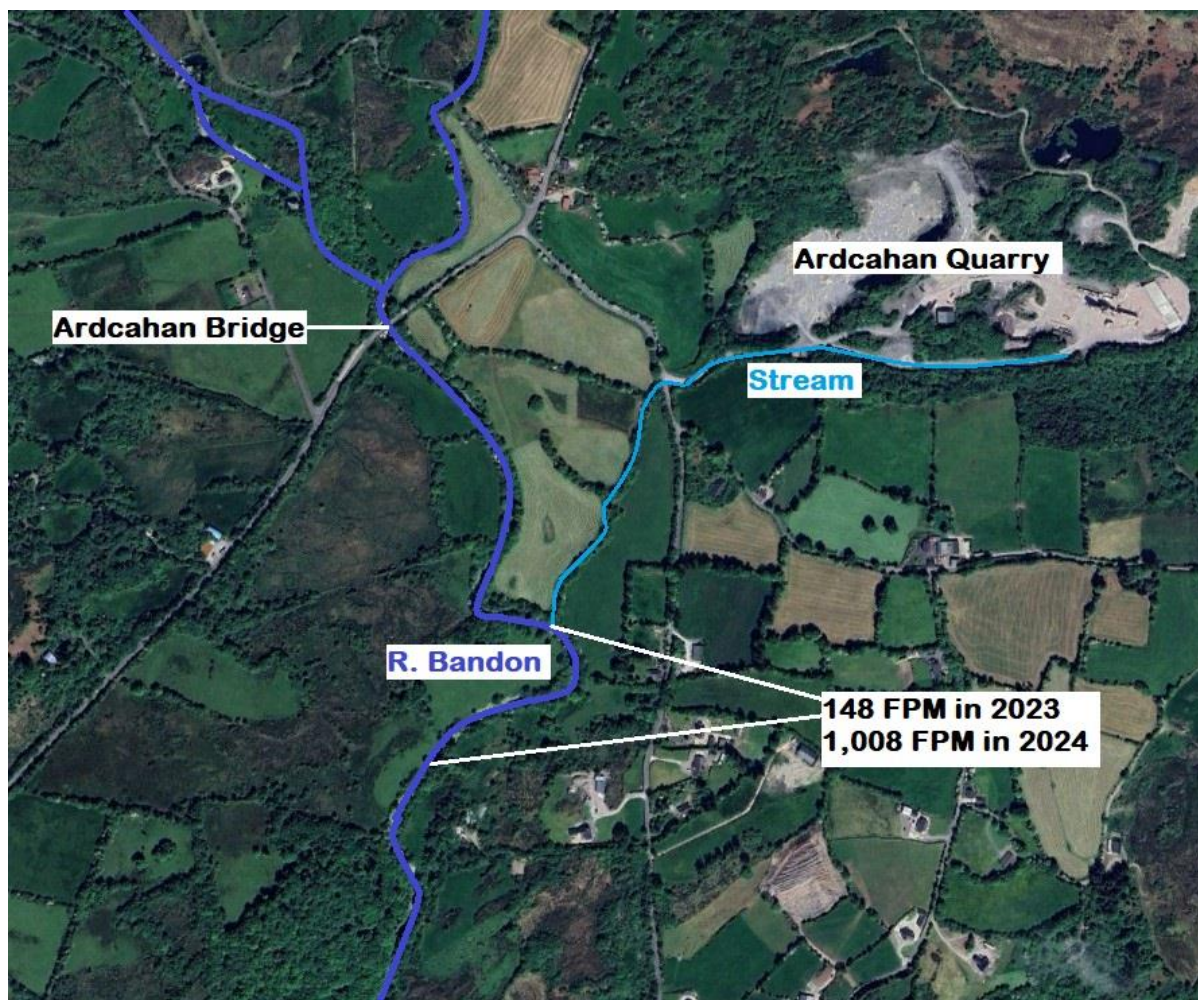
2. METHODOLOGY

A field survey was carried out on September 10th, 2024 by Pascal Sweeney (Licence No. C09/2024), and Henry Tennyson (Licence No. C196/2024). The survey methodology used was in accordance with the guidelines given in Irish Wildlife Manual No. 12, NPWS (Anon., 2004). Grid references were recorded using a hand-held Garmin GPS 72H.

3. RESULTS

1,008 live FPM were found in the section of the River Bandon surveyed (Figure 3). This included some very close to the confluence of the small stream from the quarry.

Figure 3. Freshwater Pearl Mussels close to Ardcahan Quarry



Information on the locations of freshwater pearl mussels gathered in this survey will be given to National Parks and Wildlife Service, as required by the Licence Conditions.

4. FURTHER INVESTIGATIONS & DISCUSSION

As an increased count of FPM from 148 in 2023 to 1,008 in 2024 in a relatively short section of river, is very far outside the normal margin of error for a survey of this kind, some further investigations were undertaken. In 2022, Sweeney Consultancy had been commissioned by Triturus Ltd to survey FPM bedded under Ardcahan Bridge, with a view to an application to re-locate them, in order to facilitate bridge repair and flood relief works. Fourteen FPM were recorded under the bridge and high numbers were observed within a short distance downstream. No licensed re-location of FPM followed.

On 10/09/2024, Pascal Sweeney and Henry Tennyson checked for FPM under and immediately downstream of Ardcahan Bridge. None were observed. It would appear that this absence of mussels at Ardcahan Bridge could be linked to the substantial increase found downstream of the stream from the quarry.

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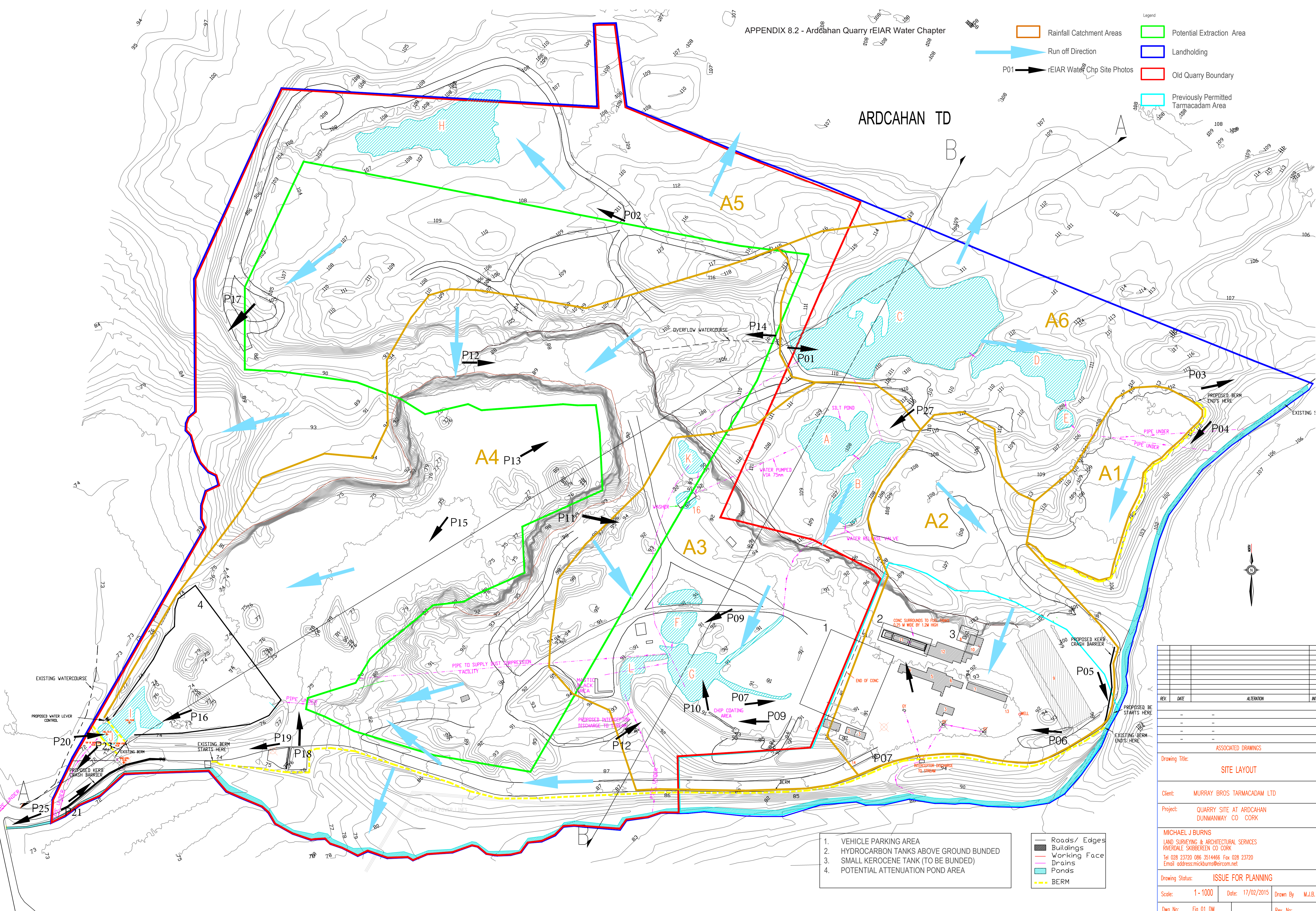
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APPENDIX B

ARDCAHAN TD

Legend

- Rainfall Catchment Areas
- Potential Extraction Area
- Landholding
- Old Quarry Boundary
- Previously Permitted Tarmacadam Area
- ▶ Run off Direction
- ▶ rEiAR Water Chp Site Photos



1. VEHICLE PARKING AREA
2. HYDROCARBON TANKS ABOVE GROUND BUNDED
3. SMALL KEROCENE TANK (TO BE BUNDED)
4. POTENTIAL ATTENUATION POND AREA

- Roads/ Edges
- Buildings
- Working Face
- Drains
- Ponds
- BERM

REV.	DATE	ALTERATION	INT.
ASSOCIATED DRAWINGS			
Drawing Title: SITE LAYOUT			
Client: MURRAY BROS TARMACADAM LTD			
Project: QUARRY SITE AT ARDCAHAN DUNMANWAY CO CORK			
MICHAEL J BURNS LAND SURVEYING & ARCHITECTURAL SERVICES RIVERDALE SKIBBEREEN CO CORK Tel 028 23720 086 3514466 Fax 028 23720 Email address:mickburns@eircom.net			
Drawing Status: ISSUE FOR PLANNING			
Scale: 1 - 1000	Date: 17/02/2015	Drawn By: M.J.B.	
Dwg No: Fig 01_DM			Rev. No: -

APPENDIX C

April 2026

Japanese Knotweed Management Plan

Ardcahan Quarry

**On behalf of
Murray Brothers Tarmacadam Ltd.**



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Title: Japanese Knotweed Management Plan, Ardcahan Quarry, Murray Brothers Tarmacadam Ltd.

Job Number: E2049

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Signed: Annie Coady

Checked By: Dyfrig Hubble

Signed: [Signature]

Approved By: Dyfrig Hubble

Signed: [Signature]

Revision Record

Issue No.	Date	Description	Remark	Prepared	Checked	Approved
01	18/02/2026	JK Mgt. Plan	Final	AC	DH	DH
02	21/04/2026	JK Mgt. Plan	Final	AW	DH	DH

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**Japanese Knotweed Management Plan
Ardcahan Quarry
Murray Brothers Tarmacadam Ltd.**

Contents

1	INTRODUCTION	1
1.1	Background	1
1.2	Statement of Authority	1
1.3	Aims of the JK Management Plan.....	1
1.4	Survey Area Description	2
2	BACKGROUND INFORMATION	3
2.1	Legal Context.....	3
2.2	4 th National Biodiversity Action Plan 2023 -2030.....	4
3	SITE ASSESSMENT	6
3.1	Assessment Constraints.....	8
4	JAPANESE KNOTWEED MANAGEMENT PLAN	9
4.1	Description of the JK Management Plan	9
4.2	Setting Priorities	9
4.3	Specific Remediation Actions	9
4.3.1	Site Preparation.....	9
4.3.2	Herbicide Treatment	9
4.4	Site Biosecurity Measures	10
5	FURTHER REMEDIATION OPTIONS	11
6	CONCLUSION.....	12
7	REFERENCES	13

FIGURES

Figure 1-1:	Survey Area Location.....	1
Figure 1-2:	Survey Area Context.....	2
Figure 3-1:	JK Locations.....	6

TABLES

Table 5-1: Further Remediation Options 11

PLATES

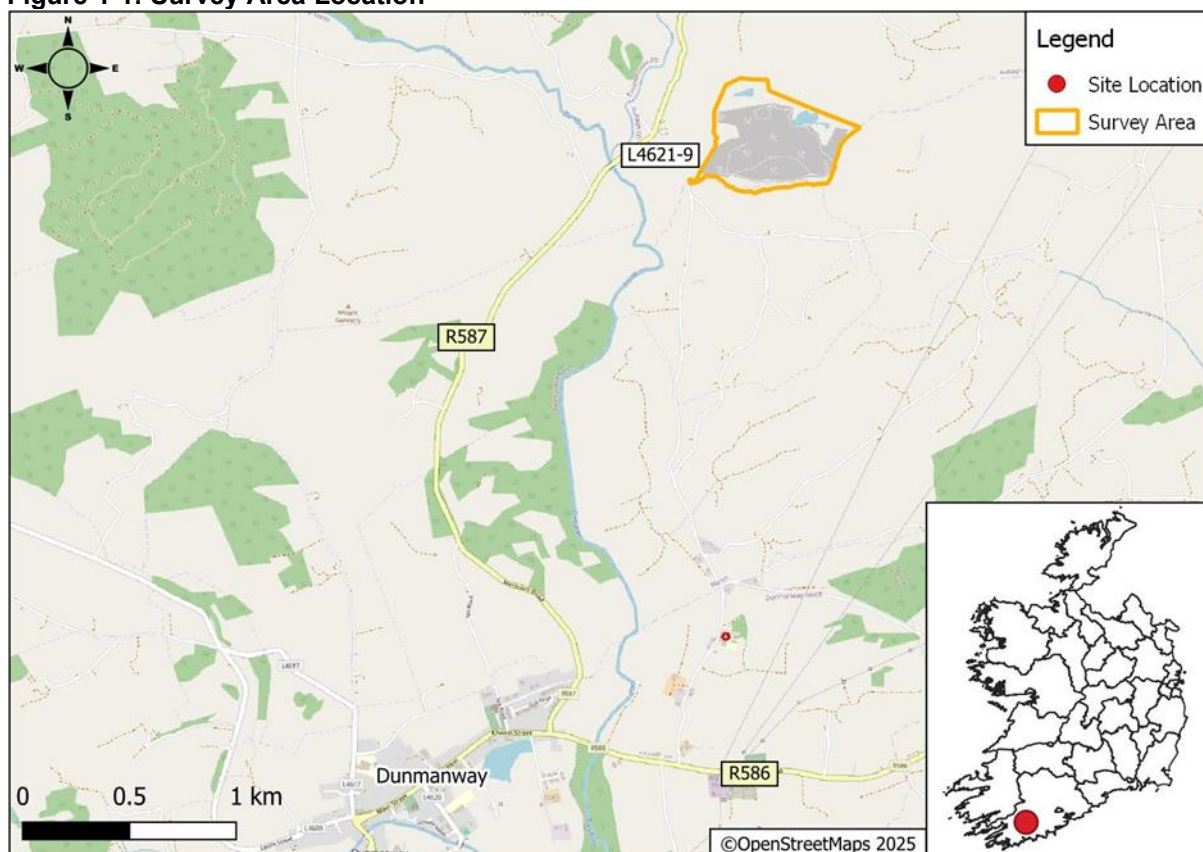
Plate 3-1: JK in the northeast of the Survey Area 7
Plate 3-2: JK in the southwest of the Site 8

1 INTRODUCTION

1.1 Background

Malone O'Regan Environmental ('MOR Environmental') was commissioned by McCutcheon Halley Chartered Planning Consultants on behalf of Murray Brothers Tarmacadam Ltd. ('the Applicant') to undertake an assessment of Japanese knotweed (*Reynoutria japonica*) ('JK'), and prepare a JK Management Plan at Ardcahan Quarry and associated lands at Dunmanway, Co. Cork (Irish Grid Reference: 125061 55898) ('the Survey Area'). The location of the Survey Area is shown in Figure 1-1.

Figure 1-1: Survey Area Location



1.2 Statement of Authority

This report was approved by Mr. Dyfrig Hubble, Associate Director - Ecologist. Dyfrig is a full member of the Chartered Institute of Ecology and Environmental Management ('CIEEM'). Dyfrig has over 18 years' experience working in the ecological consultancy sector and has extensive experience in undertaking invasive species surveys, preparing invasive species management plans, supervising the implementation of these plans and monitoring works.

1.3 Aims of the JK Management Plan

The principal aim of this JK Management Plan is to remediate the JK located within the Survey Area in order to safeguard existing operations and any future developments at the Survey Area and to ensure that there will be no unintentional spread of JK during any operations or future works.

The key objectives of this JK Management Plan are to:

- Identify and map all locations on site where JK is present;

- Identify the best method for managing and controlling JK on the Survey Area with regard to the existing operations;
- Provide an outline of measures which should be implemented as a matter of priority to prevent any potential spread of JK on the Survey Area; and,
- Prevent any and all unintentional spread of JK.

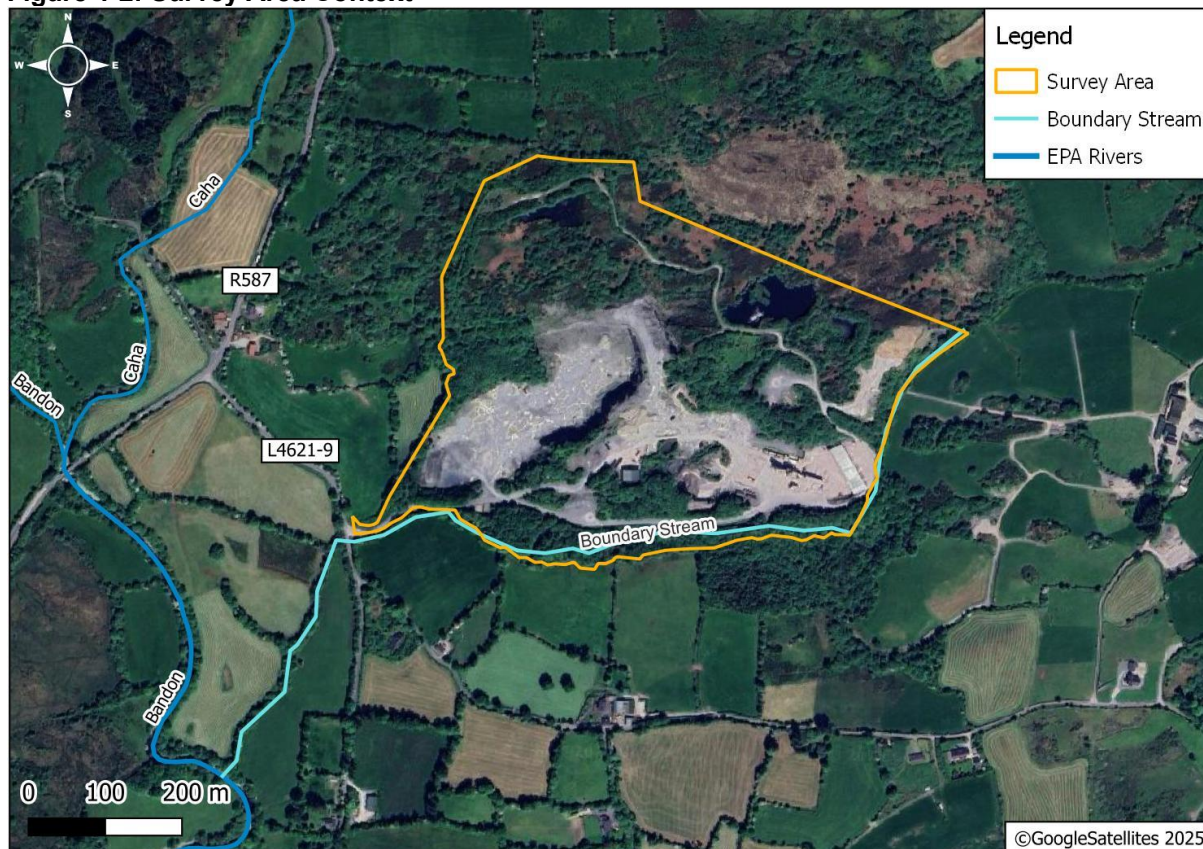
1.4 Survey Area Description

Ardcahan Quarry is in the townland of Ardcahan, approximately ('ca.') 3.5km northeast of Dunmanway in West Cork. The Survey Area is situated off the L4621-9 local road ('Hospital Road'), ca. 300m east of its junction with the R587 regional road, which links Dunmanway and Macroom (see Figure 1-2).

The Survey Area is located in a rural setting characterised by undulating topography, irregularly shaped fields and clusters of mixed woodland. The land immediately around the quarry consists of scrub, woodland and agricultural grassland. Land uses in the surrounding area primarily comprise livestock farming and rural housing.

The Survey Area is shown in Figure 1-2.

Figure 1-2: Survey Area Context



2 BACKGROUND INFORMATION

JK is an injurious, invasive herbaceous perennial. Since it was introduced as an ornamental plant in the 19th Century from Japan, it has spread across much of Ireland, particularly along watercourses, transport routes and waste grounds where its movement is unrestricted.

JK is considered to be a serious issue on the basis that it can:

- Damage buildings, hard surfaces and infrastructure by growing through concrete, tarmac and other hard surfaces;
- Outcompete and negatively impact on native plants and thus animals by forming dense thickets;
- Cause damage to flood defence infrastructure along watercourses and increase flood risk through reduced capacity of channels to carry flood water;
- Negatively impact the ability of projects to gain planning permission. Proper planning process requires measures to remove and eradicate the species from a development site;
- Cost of remediation can be both expensive and negatively impact on construction works; and,
- Decrease land value.

In Ireland, JK has not yet been recorded as producing viable seeds; all JK plants recorded in Ireland are female, which only reproduce through vegetative propagation. There are records of a hybrid JK plant, which is male; however, as of yet, no records of viable seed have been reported.

JK spreads through vegetative propagation from the crown, stem and rhizome (underground root); even small amounts of cut stem, crown or rhizome are capable of producing a new plant.

The rhizomes of JK are considered to be the main cause of the spread of JK. The rhizomes are particularly resistant to dehydration and freezing, and as little as 0.7gm of rhizome can regenerate into a new plant. Therefore, when a rhizome is disturbed or cut, it will produce a new shoot, and it is known that digging or other disturbances, such as earthworks, can significantly increase stem density. Also, JK plants can regrow from soil contaminated with JK rhizomes.

Similarly, the crown and stems of JK are also capable of regenerating. Small fragments of cut crown or stem are capable of regenerating and becoming a new plant. However, once stems are thoroughly dried, they are unable to regenerate.

Therefore, controlling the spread of JK is dependent on preventing the spread of all of these parts of the plant.

2.1 Legal Context

JK is a legally controlled species within Ireland due to the harm that it can cause to the natural environment and to built structures. It is controlled under the following legislation:

- European Union, Regulation on the prevention and management of introduction and spread of invasive alien species, 2014 [1143/2014];
- The Wildlife (Amendment) Act, 2023;
- European Communities (Birds and Natural Habitats) Regulations, 2011 to 2015
- Section 34 of the Planning and Development Acts, 2000, as amended; and,
- The European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374/2024).

Under this legislation, it is an offence to:

- Plant, disperse, allow dispersal or cause the spread of JK;
- Keep the plant in possession for the purpose of sale, breeding, reproduction, propagation, distribution, introduction or release;
- Keep anything from which the plant can be reproduced or propagated from without a granted licence; or,
- Keep any vector material, in this case soil or spoil taken from JK, for the purposes of breeding, distribution, introduction or release.

2.2 4th National Biodiversity Action Plan 2023 -2030

The National Biodiversity Plan sets out objectives, targets and actions with regard to controlling, managing and, where possible, eradicating invasive alien species in Ireland and notes that *'Efforts to tackle Invasive Alien Species will be elevated'*.

Objective Two:

- *'Meet Urgent Conservation and Restoration Needs '*

Outcome 2H:

- *'Invasive alien species (IAS) are controlled and managed on an all-island basis to reduce the harmful impact they have on biodiversity and measures are undertaken to tackle the introduction and spread of new IAS to the environment.'*

To achieve the above, 4 targets which incorporate 10 actions are set out, as follows:

- *By 2030, IAS are controlled, managed, and where possible, eradicated;*
- *By 2030, IAS are controlled, managed, and where possible, eradicated within Protected Areas and effectively controlled in urban, peri-urban areas, the wider countryside and marine and coastal areas;*
- *By end of 2023, a systematic baseline survey of priority invasive species and key hot-spot sites has been undertaken with subsequent periodic monitoring; and,*
- *By 2025, Ireland has adopted an all-island approach to invasive species.*

Objective Four of the Plan:

- *'Enhance the Evidence Base for Action on Biodiversity'*.

Action 4C8 under Outcome 4A states:

- *'The NBDC will, with relevant state partners, devise and undertake a systematic baseline survey for priority invasive species and hot-spot introduction sites with subsequent monitoring. This will be state-led and supported by Citizen Science engagement programmes'*.

3 SITE ASSESSMENT

An assessment of the Survey Area was undertaken on 9th January 2023 by two MOR Environmental Ecologists and encompassed the entire Survey Area. Updated surveys were undertaken on:

- 17th September 2024; and,
- 21st May 2025.

Large stands of JK were recorded in the northeast section of the Survey Area, adjacent to the recolonising bare ground. Stands of JK were recorded in the southwest of the Site, adjacent to the quarry. A stand of JK was recorded adjacent to the road in the south of the Survey Area. See Figure 3-1 for the locations of JK.

Figure 3-1: JK Locations



Plate 3-1: JK in the northeast of the Survey Area



Plate 3-2: JK in the southwest of the Site



3.1 Assessment Constraints

Some areas of the Site were inaccessible due to dense vegetation. However, these areas were assessed using binoculars from a distance. MOR Environmental Ecologists could not identify any stands of JK within these sections.

4 JAPANESE KNOTWEED MANAGEMENT PLAN

The JK Management Plan detailed below aims to ensure the remediation of the JK in the Survey Area and to ensure that there will not be unintentional spreading of JK to new locations. It is recommended that JK be remediated utilising herbicide treatment.

4.1 Description of the JK Management Plan

The herbicide treatment of JK within the Survey Area shall be overseen by the project Ecologist Clerk of Works ('ECoW'). The JK Management Plan, appendices and any subsequent revision shall be kept for future monitoring and remediation works. This JK Management Plan should be read in conjunction with:

- *The Knotweed Code of Practice: Managing Japanese Knotweed on Development Sites* [1];
- *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Road* [2];
- *Best Practice Management Guidelines: Japanese Knotweed Fallopia japonica* [3]; and,
- *Best Practice for Control of Japanese Knotweed Fallopia japonica* [4].

4.2 Setting Priorities

High Priority:

- JK signage should be erected;
- Remediation of JK and prevent unintentional spread of JK; and,
- No works should take place in any of the JK areas until the Ecologist has signed off that the JK remediation works have been completed.

4.3 Specific Remediation Actions

4.3.1 Site Preparation

Prior to any remediation works being undertaken, the following preparation actions will be required to limit the potential for any further spread of JK:

- Infected areas should be cordoned off (with an adequate 7m buffer zone), and signage should be erected to prevent access. These works should be supervised by the project ECoW;
- No vegetation management works or earthworks should take place within areas identified as having JK present or within the buffer zones;
- No new material or soil should be stored adjacent to the JK area; and,
- No plant or machinery should be tracked through areas containing JK or within the 7m buffer zone.

4.3.2 Herbicide Treatment

It is recommended that herbicide treatment be undertaken within the Survey Area and cover all areas of identified JK before the end of the growing season, which is typically from the end of September to the start of October. Herbicide treatments are known to be very effective and cause significant dieback of JK. Herbicide treatments generally take between 3-5 years, with spot treatment required each year until no regrowth is observed.

The initial JK treatment should be undertaken as soon as practically possible and before the end of the growing season. This will allow the JK to draw as much herbicide as possible into

the below-ground rhizomes. Following completion of the initial spray, this will then need to be followed up by a programme of regular spray treatments, comprising of three treatments per year during the growing season for a period of three to five years.

4.4 Site Biosecurity Measures

In order to mitigate against the unintentional spread of invasive species, the following biosecurity measures should be implemented.

- All vehicles, machinery and any other equipment entering / leaving the Survey Area should be washed and clean before entering and leaving the Site to prevent the spread of invasive plant material;
- Before machinery or equipment is unloaded within the Survey Area, equipment will be visually inspected to ensure that all adherent material and debris has been removed; and,
- Any vehicles and machinery that are not clean will not be permitted entry to the Survey Area.

4.4.1.1 Monitoring

The treatment works should be supervised by the project ECoW. As part of these works, the project ECoW will also monitor the effectiveness of the treatment.

On-going monitoring should be undertaken by the project ECoW in conjunction with chemical treatment to provide effective control of this species, as knotweed rhizomes that have not been completely killed off may send up new shoots as many as three years later.

Continued monitoring with the Survey Area is required in order to limit any potential spread of species to ensure desired results are being achieved and also to adapt remediation plans to improve success and treat any re-growth.

5 FURTHER REMEDIATION OPTIONS

In order to accommodate future developments / activities within the landholding (see Table 5-1), there are a number of remediation options that can be implemented in order to reduce the length time required for remediation works. The table below provides an outline of potential options that are available.

Also, it should be noted that to facilitate the development of small sections of the Survey Area, combinations of the remediation options may be implemented.

Table 5-1: Further Remediation Options

Narrative	Advantages	Disadvantages
<p>A) Removal to Landfill Excavation and removal of contaminated soil offsite to a suitably licenced facility.</p>	<ul style="list-style-type: none"> • Complete Removal of Soil from Survey Area; • Very quick to implement; and, • Allows for immediate development. 	<ul style="list-style-type: none"> • Expensive option; and, • Availability of suitably licenced facilities would need to be considered.
<p>B) Onsite Treatment This option involves excavating the JK and stockpiling the contaminated soil within a contained bund to allow for intensive herbicide treatment.</p>	<ul style="list-style-type: none"> • Far cheaper option than off-site disposal. 	<ul style="list-style-type: none"> • A suitable-sized area needs to be sterilised for the duration of the treatment process; • Bunded area would need to be fully contained; • Need for ongoing herbicide treatment; and, • Monitoring will be required.
<p>C) Onsite Burial Contaminated soil and JK would be buried onsite and fully encapsulated in a lined cell. Clean soil would then be placed on top of the cell.</p>	<ul style="list-style-type: none"> • Far cheaper option than off-site disposal; and, • No need for any ongoing herbicide treatment. 	<ul style="list-style-type: none"> • JK would need to be placed within a full encapsulated cell; • Dependant on suitable ground conditions; • The optimum requirement would be for 2m of cover materials; • May be a need to provide backfill materials; • Low-level risk would remain if the liner integrity were ever compromised; and, • Monitoring will be required.

6 CONCLUSION

Following the invasive species assessment carried out at the Site, a number of JK stands were identified within the Survey Area. It is recommended that preparation measures, the herbicide treatment and the biosecurity measures be implemented as soon as possible in order to halt the spread of JK within the Survey Area and potentially to locations off-site.

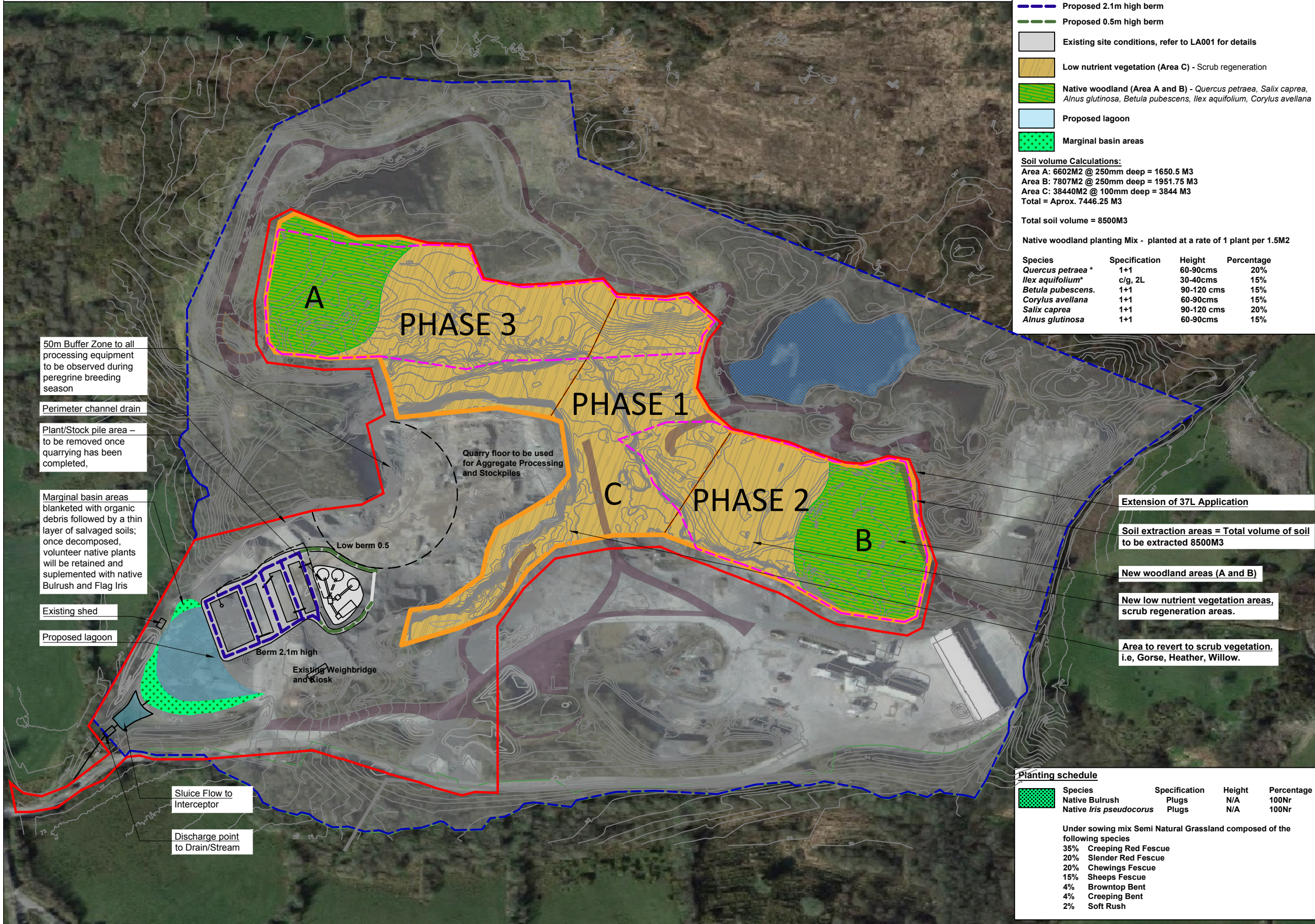
Ongoing monitoring will be carried out by the project ECoW to track treatment effectiveness and manage any potential regrowth.

7 REFERENCES

- [1] Environment Agency, "The Knotweed Code of Practice: Managing Japanese Knotweed on Development Sites," 2016.
- [2] National Roads Authority, "The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads," 2010.
- [3] Invasive Species Ireland, "Best Practice Management Guidelines: Japanese Knotweed *Fallopia japonica*," 2008.
- [4] Inland Fisheries Ireland, "Best Practice for Control of Japanese Knotweed *Fallopia japonica*," n.d..
- [5] EC, "S.I. No. 374/2024 - European Union (Invasive Alien Species) Regulations 2024," European Union, 26 07 2024. [Online]. Available: <https://www.irishstatutebook.ie/eli/2024/si/374/made/en/print>.

APPENDIX D

ARDCAHAN QUARRY REGENERATION 37L PLAN



Landscape Key

- Extension of 37L Application
- Overall site ownership
- Soil extraction areas (35202M²) = Total volume of soil to be extracted 8500M³
- 3 proposed intervention phases
- Proposed 2.1m high berm
- Proposed 0.5m high berm
- Existing site conditions, refer to LA001 for details
- Low nutrient vegetation (Area C) - Scrub regeneration
- Native woodland (Area A and B) - *Quercus petraea*, *Salix caprea*, *Alnus glutinosa*, *Betula pubescens*, *Ilex aquifolium*, *Corylus avellana*
- Proposed lagoon
- Marginal basin areas

Soil volume Calculations:
 Area A: 6602M² @ 250mm deep = 1650.5 M³
 Area B: 7807M² @ 250mm deep = 1951.75 M³
 Area C: 38440M² @ 100mm deep = 3844 M³
 Total = Approx. 7446.25 M³

Total soil volume = 8500M³

Native woodland planting Mix - planted at a rate of 1 plant per 1.5M²

Species	Specification	Height	Percentage
<i>Quercus petraea</i> *	1+1	60-90cms	20%
<i>Ilex aquifolium</i> *	c/g, 2L	30-40cms	15%
<i>Betula pubescens</i> .	1+1	90-120 cms	15%
<i>Corylus avellana</i>	1+1	60-90cms	15%
<i>Salix caprea</i>	1+1	90-120 cms	20%
<i>Alnus glutinosa</i>	1+1	60-90cms	15%

THIS IS NOT FOR CONSTRUCTION

This drawing is the copyright of the Landscape Architect unless otherwise stated. All dimensions are in millimeters. Where dimensions are not given, drawings must not be scaled and the matter must be referred to the Landscape Architect. If the drawing includes conflicting details/dimensions the matter must be referred to the Landscape Architect. All dimensions must be checked on site. The Landscape Architect must be informed, by the contractor, of any discrepancies before work proceeds.

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Client: Murray Bros. Tarmacadam Ltd.

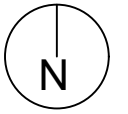
Project: Ardcahan Quarry Restoration 37L Plan
 Drawing: Landscape Layout

Date: 27/03/2026

Drawn By: Luis Medeiros
 Checked By: Cathal O'Meara

Issue: Planning

Dwg No: 2009_LA002 15



Scale 1:2500, @ A3

50m Buffer Zone to all processing equipment to be observed during peregrine breeding season

Perimeter channel drain

Plant/Stock pile area - to be removed once quarrying has been completed,

Marginal basin areas blanketed with organic debris followed by a thin layer of salvaged soils; once decomposed, volunteer native plants will be retained and supplemented with native Bulrush and Flag Iris

Existing shed

Proposed lagoon

Berm 2.1m high

Existing Weighbridge and Kiosk

Quarry floor to be used for Aggregate Processing and Stockpiles

Low berm 0.5

Sluice Flow to Interceptor

Discharge point to Drain/Stream

Extension of 37L Application

Soil extraction areas = Total volume of soil to be extracted 8500M³

New woodland areas (A and B)

New low nutrient vegetation areas, scrub regeneration areas.

Area to revert to scrub vegetation. i.e. Gorse, Heather, Willow.

Planting schedule

Species	Specification	Height	Percentage
Native Bulrush	Plugs	N/A	100Nr
Native <i>Iris pseudocorus</i>	Plugs	N/A	100Nr

Under sowing mix Semi Natural Grassland composed of the following species
 35% Creeping Red Fescue
 20% Slender Red Fescue
 20% Chewings Fescue
 15% Sheeps Fescue
 4% Browntop Bent
 4% Creeping Bent
 2% Soft Rush