

An Coimisiún Pleanála
64 Marlborough Street
Dublin 1

14 August 2026

Re: ACP Ref. 324277 – Response to Observations on Substitute Consent Application at Ardcahan, Dunmanway, Co. Cork

A Chara,

On behalf of the Applicant, Murray Brothers Tarmacadam Ltd., this letter responds to the observations received by An Coimisiún Pleanála in relation to the substitute consent application for quarrying of rock undertaken between February 1990 and October 2014 at Ardcahan, Dunmanway, Co. Cork.

The substitute consent application was submitted to An Coimisiún Pleanála on 6 May 2026. Four observations were received from the following third parties:

- Alice and Patrick Hayes
- Kathleen and Timothy Baker
- Norman and Patricia Berry
- Transport Infrastructure Ireland

In addition, Cork County Council submitted a report with their review of the application. A response to the Council's report is provided separately.

The observations raised matters relating primarily to the following themes:

- Planning History and Legal Status, including Exceptional Circumstances
- Quarry and Macadam Plant
- Water Quality, Freshwater Pearl Mussel and the Bandon River SAC
- Poly Aluminium Chloride
- Noise, Dust and Residential Amenity
- Biodiversity, Habitat Loss and Invasive Species
- Traffic and Access
- Alleged Inconsistencies

These matters are addressed below.

Applicant Response to Third-Party Observations

The Applicant acknowledges and has carefully considered the observations submitted by Kathleen and Timothy Baker, Norman and Patricia Berry, Alice and Patrick Hayes, and Transport Infrastructure Ireland. The observations raise a range of planning, legal, environmental and transport-related matters, which are addressed below by reference to the principal themes arising from the submissions.

Planning History and Legal Status

A number of observations question the historic planning status of the quarry, including references to planning permissions, the Section 261 registration process and whether the quarry was authorised.

The Planning Statement provides a detailed review of the planning history of the site and confirms that the pre-1963 status of quarrying activity has previously been accepted by both Cork County Council and An Bord Pleanála in the context of planning and section 261A assessments. The Applicant acknowledges that, following the failure to register the quarry under section 261 in 2005, the quarry became unauthorised from that date. This is the basis upon which the present substitute consent application has been made. The substitute consent process provides a statutory mechanism, under Irish and EU law, by which historical development may be retrospectively assessed by way of remedial EIA and Appropriate Assessment and, where appropriate, regularised subject to necessary remediation measures.

The Planning Statement further notes that An Bord Pleanála previously granted leave to apply for substitute consent under Ref. 305621-19 and determined that exceptional circumstances existed warranting recourse to the substitute consent process. In doing so, the Board concluded that the environmental effects of the development could be assessed, that public participation could be facilitated, and that any environmental impacts could likely be substantially remediated.

The Applicant submits that the exceptional circumstances previously identified remain applicable to the current substitute consent application. In particular, the long-established pre-1963 operation of the quarry, its complex statutory and enforcement history, the availability of retrospective environmental assessment, and the remediation measures now proposed support the continued use of the substitute consent procedure in this case.

The Applicant notes the references in the observations to the concurrent application for future development under section 37L of the Planning and Development Act 2000, as amended. The current response relates to the substitute consent application only. The Applicant acknowledges that the substitute consent application and the future-development application are linked through the statutory framework; however, the existence of the section 37L process does not alter the substantive test to be applied to the substitute consent application. The substitute consent application must be assessed on its merits, having regard to the rEIAR, rNIS, Planning Statement, observations received and the statutory criteria applicable to substitute consent.

For the avoidance of doubt, the relevant planning history is set out in the Planning Statement, including the accepted pre-1963 status of the quarry, the Section 261/261A history and the separate permission for the macadam plant under Cork County Council Ref. W/98/294.

Quarry and Macadam Plant

The observers contend that the quarry and macadam plant should be considered together and raise concerns regarding project-splitting.

The Applicant does not accept that the application boundary has been artificially drawn or that the application constitutes project-splitting. The substitute consent application relates to historical quarrying development undertaken between February 1990 and October 2014 and has been framed by reference to the development requiring retrospective EIA and Appropriate Assessment. The fact that the macadam plant is located within the wider landholding and shares certain infrastructure does not mean that the permitted macadam plant must itself form part of the substitute consent development. Its potential environmental interactions have nevertheless been considered through the cumulative assessment undertaken in the rEIAR and rNIS.

The current application follows the scope established through the planning history of the site and the previous Board directions regarding substitute consent. The planning history confirms that the macadam plant was granted planning permission under Cork County Council Ref. W/98/294 and constitutes a separate planning unit from the quarry development under assessment. The existence and operation of the plant has nevertheless been considered in the cumulative impact assessments undertaken in both the rEIAR and rNIS, including in respect of water quality and designated ecological receptors.

The rEIAR expressly assesses cumulative impacts associated with the macadam plant, including potential effects from runoff, wastewater and operational activities, and concludes that no significant cumulative environmental effects were identified.

Water Quality, Freshwater Pearl Mussel and the Bandon River SAC

A significant proportion of the observations concern the potential impact of quarry activities on the Bandon River SAC, water quality, sedimentation and Freshwater Pearl Mussel populations.

These issues have been extensively assessed in the rNIS and constitute one of the principal matters considered as part of the Appropriate Assessment process. The rNIS acknowledges the hydrological connection between the quarry and the Bandon River SAC and provides a detailed evaluation of potential historical water quality effects and implications for Freshwater Pearl Mussel.

The assessment concludes that, while quarry operations may have contributed to suspended sediment loading during periods of heavy rainfall, there is insufficient evidence to quantify any such contribution relative to suspended sediment or other polluting runoff from other land uses within the wider catchment. The rNIS identifies forestry, agriculture, peat cutting, construction and other diffuse sources as the primary established contributors to water quality pressures within the local catchments.

Ecological surveys recorded substantial Freshwater Pearl Mussel populations downstream of the quarry stream confluence, with 1,008 mussels recorded during the 2024 survey. The rNIS concludes that quarry operations did not adversely affect the adult mussel population, while acknowledging uncertainty regarding historical contributions to cumulative sediment loads affecting juvenile habitat quality within the wider SAC. This uncertainty is addressed through the remedial measures and ongoing monitoring commitments proposed as part of the application.

The Applicant does not accept the observers' contention that the acknowledgement of historical data limitations is equivalent to a finding of adverse effect on the integrity of the Bandon River SAC. The rNIS transparently identifies the available evidence, the hydrological pathway, the potential for episodic sediment contribution and the wider catchment pressures affecting Freshwater Pearl Mussel. It then assesses those matters in combination with survey evidence and the proposed remedial measures. The observers rely on selected passages concerning uncertainty but do not provide alternative technical evidence demonstrating that the historical quarry development caused an adverse effect on the integrity of the SAC. The Appropriate Assessment process requires the competent authority to assess the evidence as a whole, rather than treating the absence of complete contemporaneous monitoring records as determinative.

The overall conclusion of the rNIS is that, having regard to the available scientific evidence and the proposed remedial measures, no adverse effect on the integrity of the Bandon River SAC has been identified arising from the historical quarry development.

Insofar as the observations refer to qualifying interests screened into the rNIS, including Freshwater Pearl Mussel, Brook Lamprey and SAC habitat interests, the Applicant notes that these receptors were considered within the structure of the Stage 2 assessment by reference to the relevant source-pathway-receptor relationships. The rNIS addresses the potential for water quality impairment as the principal pathway by which the historical quarry development could have affected the Bandon River SAC. No

additional hydrological or ecological pathway has been identified in the observations that would alter the conclusions of the rNIS.

Annex I Habitat

The rEIAR identifies the historic habitat losses associated with quarrying activity and proposes a comprehensive suite of remedial measures, including retention and protection of remaining woodland and heath habitats, wetland and pond enhancement, invasive species control, ecological monitoring, habitat restoration and natural succession measures.

It should be noted that initial extraction activities that took place at the Site pre-1963, prior to the substitute consent period of 1990 and 2014. The vegetation clearance works that resulted in a loss of habitat pre-1990 are not subject to assessment within the substitute consent application.

It should be noted that the purpose of the Substitute Consent application is to assess and regularise development already undertaken and to determine whether appropriate remedial measures are proposed, rather than to secure offsetting for all historic habitat changes on a hectare-for-hectare basis.

A Remediation Plan was submitted with the Substitute Consent application, and a Regeneration Plan was submitted with the S37L application. Combined, these two plans provide detailed proposals for the existing and future ecology on site.

Historic Monitoring Records and Retrospective Assessment

The observations contend that the absence of full contemporaneous monitoring records prevents a lawful retrospective EIA or Appropriate Assessment from being carried out. The Applicant does not accept this position. The substitute consent process exists to enable historical development to be assessed retrospectively where EIA and/or Appropriate Assessment was not undertaken at the time. The rEIAR and rNIS acknowledge the limitations associated with historical records and apply a retrospective assessment methodology using available planning records, aerial photography, site survey information, ecological surveys, hydrological assessment and specialist technical inputs. The absence of a complete contemporaneous dataset is not, in itself, determinative of refusal where the competent authority is provided with sufficient information to assess the likely significant effects of the development and the adequacy of remedial measures.

It is worth noting that the historic EPA Water Framework Directive (WFD) monitoring results for the 1st Cycle (2010 to 2015) and early 2nd Cycle (2015 to 2018) show that the Bandon and Caha River Water Quality Status was classified as 'Good' and that no deterioration in water quality is identified while the quarry was in operation. Post 2018 the status decreased to Moderate and the Bandon River is deemed to be At Risk, primarily from Agricultural Pressures. (Refer to <https://gis.epa.ie/EPAMaps/Water>.) This supports the proposition that the source of deterioration in water quality in the Bandon River is from external sources and not the quarry.

Poly Aluminium Chloride (PAC)

The observations raise concerns regarding the use of PAC in wash-water treatment processes.

The rNIS specifically assesses the use of PAC and acknowledges that, under certain circumstances, aluminium compounds can affect aquatic organisms. However, the assessment demonstrates that only very small volumes of PAC were used on site, that the material was heavily diluted, retained internally within settlement ponds and further diluted before any potential discharge. The rNIS concludes that PAC use at the site posed a very low risk to aquatic ecology, including Freshwater Pearl Mussel.

Noise, Dust and Residential Amenity

The observations refer to historical noise, dust, blasting activities and general disturbance associated with quarry and macadam plant operations.

These matters were assessed in the rEIAR through detailed technical studies. The rEIAR confirms that quarrying operations ceased in 2014 following compliance with the enforcement notice issued by Cork County Council and that no quarrying activity has occurred since that time. The assessment also notes that the nearest dwellings are located between approximately 275m and 450m from the site boundary.

The substitute consent application relates to historical development only. Accordingly, the principal question for the Board is the nature and significance of environmental effects arising from that historical development and the adequacy of the proposed remedial measures. The rEIAR concludes that there is no evidence of significant ongoing environmental effects relating to dust, hydrology or ecology arising from historical quarry operations. It also addresses historical noise, dust and blasting matters and does not identify any significant residual effects that would warrant refusal of substitute consent. Additional remediation, monitoring and biodiversity enhancement measures are proposed.

CLV Consulting have provided a technical note in response to the council's review of the application, which includes details on the assessments completed. This letter is included as an appendix to this response.

Biodiversity, Habitat Loss and Invasive Species

The observations reference habitat loss, woodland removal and the presence of invasive species.

The Applicant acknowledges that historical quarry development resulted in the loss of areas of woodland and dry heath habitat. The rEIAR identifies the loss of Annex I habitats, specifically Old Sessile Oak Woodland and European Dry Heath, as the principal significant adverse environmental effect associated with the quarry development. These impacts are acknowledged within the assessment and are addressed through the proposed remediation strategy.

To address these impacts, the application incorporates a comprehensive Remediation Plan providing for the protection of remaining habitats, habitat regeneration, long-term woodland establishment, biodiversity enhancement measures and invasive species management, including the treatment of rhododendron and Japanese knotweed. The measures are to be supported by an Ecological Clerk of Works and an ecological monitoring programme.

The observation from Alice and Patrick Hayes also refers to Peregrine Falcon and Kestrel activity at the quarry. The Applicant notes that the ecological assessments and remediation strategy recognise the ecological value of habitats now present within the quarry, including quarry faces and regenerating habitats. The presence of bird species using quarry faces does not demonstrate an adverse effect arising from the historical development. Rather, it confirms that the quarrying environment creates and supports ecological features that can be managed through the proposed remediation, monitoring and ecological supervision measures.

Traffic and Access

Transport-related matters, including historical access arrangements, HGV movements, road safety and traffic modelling, have been considered in the context of the retrospective assessment of the historical quarry development. The references in the observations to historical bollards, turning restrictions and access arrangements are noted. However, these matters do not provide technical evidence demonstrating that the transportation assessment methodology, assumptions, capacity analysis or safety conclusions are flawed.

The Applicant notes the observation regarding the alleged absence of certain appendices from the public file associated with the concurrent section 37L application, including the Traffic Modelling Report. This is

a matter concerning the completeness of the public file for the relevant application documentation. It does not, of itself, identify a substantive error in the traffic assessment methodology, traffic generation assumptions, routeing assumptions, junction capacity assessment or transport conclusions presented in the assessment. No independent traffic engineering evidence has been submitted by the observers to demonstrate that the traffic assessment is technically unsound or that any transport-related impact would warrant refusal of substitute consent.

For completeness, the Traffic Modelling report, as submitted in Appendix 12.1 of the EIAR in the S37L application is included as an appendix to this response letter.

It is noted that Transport Infrastructure Ireland raised no objections to the substitute consent application.

Alleged Inconsistencies

The observations refer to alleged inconsistencies relating to ownership dates, extraction areas, planning reference numbers, blasting frequency, application boundaries and the relationship between the quarry and macadam plant. The Applicant submits that these points do not identify any material inconsistency that undermines the validity of the application or the conclusions of the rEIAR or rNIS. The environmental assessments are based on the identified substitute consent area, historic aerial photography, available records, field surveys and specialist technical assessment. Minor differences in historical descriptions, legacy planning references or contextual background do not alter the environmental receptors assessed, the source-pathway-receptor analysis, the remediation measures proposed, or the conclusions reached in respect of EIA and Appropriate Assessment.

Conclusion

While the observations raise detailed objections, they do not provide technical evidence which displaces the conclusions of the rEIAR, rNIS or Planning Statement. The matters raised have either been expressly assessed within the application documentation or relate to historical planning context which is already acknowledged and forms part of the basis for the substitute consent application. Accordingly, the Applicant submits that the observations do not identify any planning, environmental, transport, legal or procedural basis that would warrant refusal of substitute consent.

Yours sincerely,



Saoirse Kavanagh

McCutcheon Halley

Appendix A – Substitute Consent Site Layout and Remediation Plan (Appendix 11.1 of rEIAR and submitted as a standalone drawing)

Please note a new 'former ponds' label has been added to two of the ponds shown in the centre of the site. Previously there was no label on these ponds.

ARDCAHAN QUARRY SUBSTITUTE CONSENT SITE LAYOUT AND REMEDIATION PLAN



Appendix B – Regeneration S37L Plan (Appendix 11.1 of S37L EIAR and submitted as a standalone drawing)

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

Low berm 0.5

Quarry floor to be used for Aggregate Processing and Stockpiles

PHASE 3

PHASE 1

PHASE 2

A

B

C

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.

Legend:

- 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 = Aprox. 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%

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

	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) - <i>Quercus petraea</i>, <i>Salix caprea</i>, <i>Alnus glutinosa</i>, <i>Betula pubescens</i>, <i>Ilex aquifolium</i>, <i>Corylus avellana</i>
	Proposed lagoon
	Marginal basin areas

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

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

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<i>Salix caprea</i>	1+1	90-120 cms	20%
<i>Alnus glutinosa</i>	1+1	60-90cms	15%

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

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.

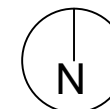


Project: Ardcahan
Quarry Restoration 37L
Plan
Drawing: Landscape
Layout

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

Dwg No: 2009_LA002
16

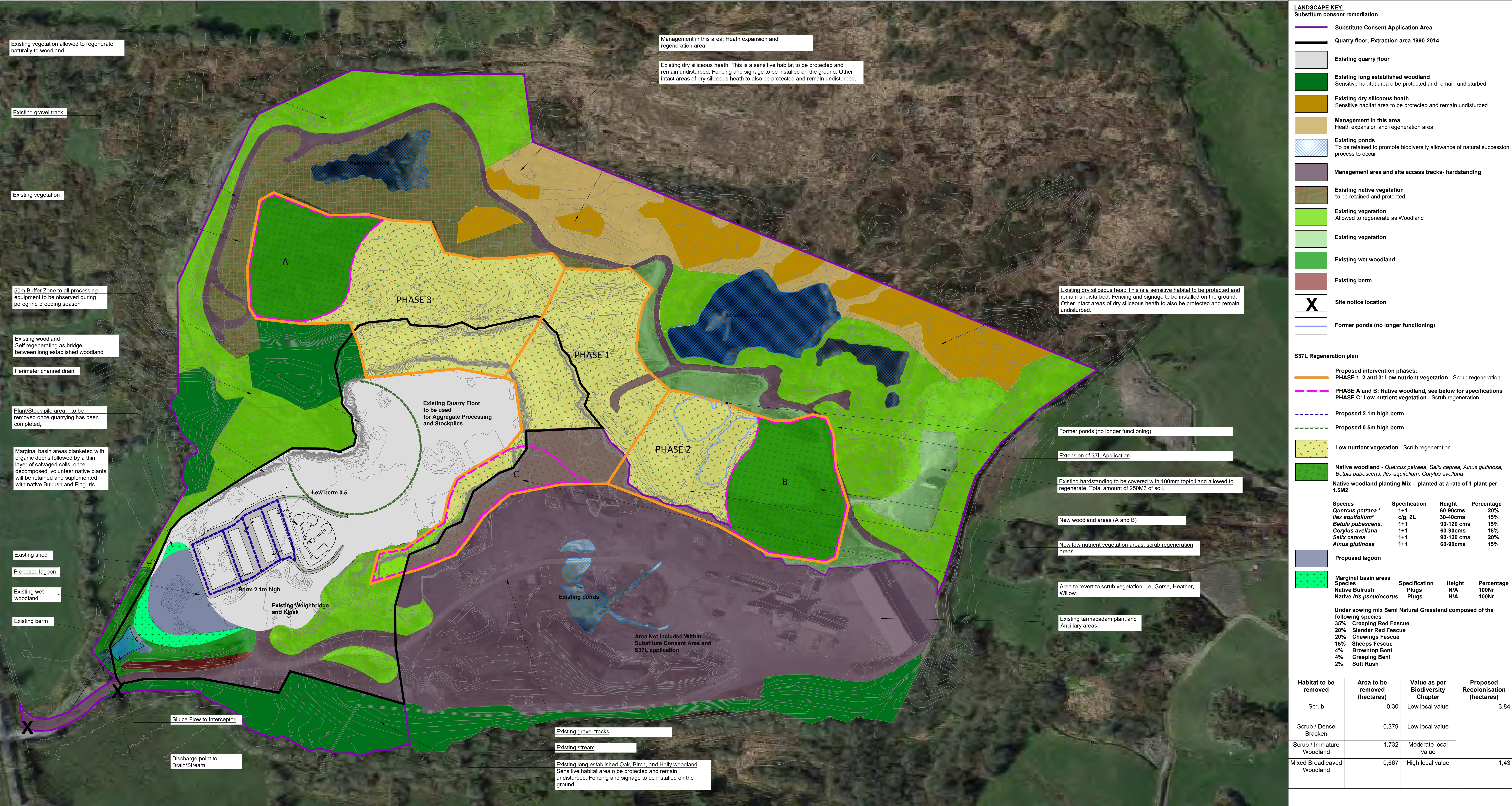
cathal
meara
landscape architects



Scale 1:2500, @ A3

Appendix C – Combined Substitute Consent Remediation and S37L
Regeneration Plan (composite drawing prepared for this response)

ARDCAHAN QUARRY COMBINED SUBSTITUTE CONSENT REMEDIATION AND S37L REGENERATION PLAN



Substitute Consent Works- Landscape Remediation

This landscape plan proposes landscape remediation measures to address significant landscape and visual related effects that have occurred between 1990 and 2014. The rEiAR identifies the historic habitat losses associated with quarrying activity and proposes a comprehensive suite of remedial measures. The guiding framework for this landscape plan is the acknowledgement of the current value of the ecological processes that have generated onsite and the facilitation of this natural succession is incorporated as a sustainable method for landscape and habitat restoration (See points 1-4 below). However, this is not merely a passive concern. Active processes such as Ecological monitoring and Invasive species monitoring and control will be engaged to promote landscape remediation (see points 5,6 below).

In short the main points of the Landscape Remediation are;

- Retention and protection of remaining woodland habitats, (see Existing Long Established Woodland in Remediation Plan)
- Retention and protection of remaining heath habitats (see Existing Dry Siliceous Heath Habitat and Management area for expansion in Remediation Plan)
- Wetland and pond enhancement (See Existing Ponds in Remediation Plan)
- Existing Native Vegetation allowed to regenerate naturally-- wet woodland and scrub vegetation
- Invasive species control
- Ecological monitoring

S37L Application – Landscape Regeneration

The proposed development comprises the extension of an established quarrying operation within a long-standing quarry site that has historically supplied aggregate materials in West Cork. The proposal seeks permission for the extraction of quartzitic sandstone within a 5.01ha extraction area over a 20-year period, with extraction phased and accompanied by progressive restoration measures. In short the main points of the Landscape Regeneration are;

- Once quarrying activities have ceased, it is proposed to use the previously excavated site topsoil (phases 1, 2 and 3) to facilitate the establishment of new woodland habitats. The addition of approx. 250mm of topsoil will facilitate the expansion of these fragmented woodland habitats. These areas have been identified to support the expansion of the Existing Long Established Woodland in the Remediation Plan, Area A, and also Area B in the S37L Regeneration Plan.

- A further area, Area C, has been identified as a transition scrub area in the supporting ecological report and this will be facilitated with the spreading of approx. 100mm of topsoil over the area. No imported seed will be brought into this area to facilitate the development of low nutrient scrub vegetation (ie Gorse, Heather and Willow).

- Incorporation of Marginal wetland basin planting as a landscape transition from the lagoon. The planting of pockets of native wetland vegetation including Bulrush and Native Flag Iris will support the development of Marginal Wetland Planting as will the sowing of a native Seminatral grassland understorey.

Screening vegetation as well as raised berms along the southern boundary and south-western boundaries will be retained undisturbed to restrict views from the nearby receptors. Screen planting at these locations is developing well and needs to be retained as these berms merge with the existing hedgerows and peripheral scrub vegetation lending a consistent naturalistic appearance when viewed from a distance.

Conclusion

A Remediation Plan was submitted with the Substitute Consent application, and a Regeneration Plan was submitted with the S37L application. Combined these two plans provide detailed proposals for the existing and future ecology on site. The substitute consent remediation plan focuses on the lands within the northern portion of the site. While the S37L regeneration plan proposes regeneration in the centre of the site, once the proposed future quarrying has been completed. The future quarrying activity, proposed as part of the S37L application, is in the centre of the overall site to ensure minimal impact on the remediation proposed as part of the substitute consent application. The two plans work alongside each other to provide a robust proposal for the landscape and ecology on site. This composite drawing has been prepared to demonstrate how the two plans interact.

THIS IS NOT FOR CONSTRUCTION

Cathal O'Meara
Landscape Architects
087 9202549
2 Mc Sweeney St,
Fermoy, Co. Cork

cathal meara
landscape architects

Chartered member of the Irish Landscape Institute

Client: Murray Bros.
Tarmacadam Ltd.

Project: Ardcahan Quarry
Combined Substitute
Consent Remediation And
S37L Regeneration Plan

Date: 11/08/2026
Drawn By:
Luis Medeiros
Checked By:
Cathal O'Meara

Issue: Planning
Dwg No: 2009_LA001
REV 21

Scale 1:1000, @ A0

Appendix D – CLV Response Letter



23/09991L01

31 July 2026

The NSC Campus, Mahon, Cork.

Tel: +353 (0)21 242 8704

info@clvconsulting.ie

www.clvconsulting.ie

Ms. Saoirse Kavanagh
McCutcheon Halley Chartered Planning Consultants
6 Joyce House
Barrack Square
Ballincollig
Co. Cork

Saoirse,

RE: ARDCAHAN QUARRY - CORK COUNTY COUNCIL REPORT RESPONSE LETTER

Pursuant to the reports submitted by Cork County Council in respect of the substitute consent and S37L planning permission submissions for the Ardcahan Quarry, we have provided a response to the items relevant to the noise and vibration impact EIAR chapters as follows.

Council Report Item #1

1.) The respective number and distances of all noise sensitive receptors within 500m and 1000m of the proposed development should be presented and quantified. The referenced noise sensitive receptors that each selected noise monitoring location is considered to be representative of should also be identified and quantified and shown on a suitably scaled map.

CLV Response:

A scaled map identifying each of the nearest noise sensitive receptors within 500m and 1km of the substitute consent application is provided in Appendix A at the rear of this document. The map also includes the 2014 noise monitoring locations (S01, 02 & 03).

A table detailing the distances of the identified noise sensitive receptors and noise monitoring locations from the nearest quarry boundary is provided in Table 1 on the following page.

Note that the values listed represent the distance from the receptors to the nearest property boundary and not to the nearest proposed / existing working areas of the quarry which would have different variances depending on the direction.

Receptor	Type	Distance (metres)
1	Dwelling	505 m
2	Dwelling	524 m
3	Dwelling	519 m
4	Dwelling	434 m
5	Dwelling	395 m
6	Dwelling	668 m
7	Dwelling	697 m
8	Dwelling	690 m
9	Dwelling	781 m
10	Dwelling	761 m
11	Dwelling	888m
12	Dwelling	971m
13	Dwelling	904 m
14	Dwelling	644 m
15	Dwelling	405 m
16	Dwelling	342 m
17	Dwelling	233 m
18	Dwelling	550 m
19	Dwelling	387 m
20	Dwelling	726 m
21	Dwelling	772 m
22	Dwelling	880 m
23	Dwelling	938 m
24	Dwelling	946 m
25	Dwelling	849 m
26	Dwelling	662 m
27	Dwelling	540 m
28	Dwelling	498 m
29	Dwelling	449 m
30	Dwelling	180 m
31	Dwelling	170 m
32	Dwelling	303 m
33	Dwelling	284 m
34	Dwelling	632 m
35	Dwelling	678 m
36	Dwelling	881 m
37	Dwelling	928 m
38	Dwelling	483 m
39	Dwelling	496 m
40	Dwelling	523 m
41	Dwelling	437 m
42	Dwelling	636 m
43	Dwelling	940 m
44	Dwelling	331 m
45	Dwelling	303 m
S01	Noise Monitoring Location	287 m
S02	Noise Monitoring Location	185 m
S03	Noise Monitoring Location	305 m

Table 1 Noise Monitoring Locations & Noise Sensitive Receptors Within 1km of Ardcahan Quarry

Council Report Item #2

2.) Clarify whether an assessment has been carried out for the presence of any tonal/impulsive elements in the noise arising from the identified noise sources and if the overall predicted and cumulative noise levels have been adjusted accordingly for the presence or otherwise of such elements.

CLV Response:

A tonal element assessment cannot be definitively carried out given without octave band noise level data for specific site sources. However, the predicted noise emission levels from the quarry would not be sufficiently above the ambient noise level environment in the vicinity to give rise to tonal elements.

The noise emission levels for both the construction and operational phases of the quarry are compared with the ambient noise levels measured in the vicinity in Table 2 below.

Receptor Location	Measured Ambient Noise Level	Estimated Noise Level		Comparison of Quarry Noise Levels w/ Ambient
		Construction Phase	Operational Phase	
Dwellings to East	41 - 49	43	43	Consistent with or below
Dwellings to Southwest	50 - 51	37	41	Below
Dwellings to Southeast	48 - 50	38	40	Below

Table 2 Quarry Noise Emission Comparison with Ambient Noise Level Environment (dB LAeq)

As can be seen from the above comparison, the predicted noise emission levels from the quarry are consistent with or below the ambient noise level environment in the vicinity and therefore would not be sufficiently high enough for tonal elements to manifest themselves at the nearest noise sensitive receptors even if they were present.

It should also be considered that quarry noise emissions (especially when there are multiple sources in operation at the same time) are generally broadband in nature.

In respect of impulsive noise, there will likely be impulsive noise events that occur due to the processes involved with earth moving equipment. However, as demonstrated in Table 2, the levels would not be sufficiently high enough for impulsive events to be at a nuisance level at the nearest noise sensitive receptors.

There would therefore be no justifiable basis for adjusting the predicted noise levels accordingly.

It should also be noted that all quarry noise sources will occur during daytime periods only.

Council Report Item #3

3.) Clarify whether overall predicted cumulative noise levels have had regard to noise levels and any noise contribution arising from the tarmacadam/asphalt plant.

CLV Response:

We can confirm that the predicted cumulative noise levels included contributions from both the future proposed quarry activities as well as from the existing tarmacadam / asphalt plant operations.

Council Report Item #4

4.) The operational criterion as set out in Page 10.10 of the Noise and Vibration Impact Assessment Report, refers to 55dB $L_{Aeq,1hr}$ as being adopted as appropriate. The daytime criterion as set out in Page 10.19 of the same assessment report refers to 50dB $L_{Aeq,1hr}$. This is assumed to be an error which should be clarified.

CLV Response:

We can confirm that is correct. The operational phase noise criterion of 55dB $L_{Aeq,1hr}$ was established in Section 9.4.1.1 of the Chapter. The subsequent referencing of this criterion in Sections 9.5.3 was incorrectly stated as being 50dB $L_{Aeq,1hr}$.

Note that this typo does not have any bearing on the assessment findings or conclusions detailed in the Chapter.

We trust this letter provides sufficient response for the concerns raised by Cork County Council. However, please do not hesitate to contact this office if they have any further queries or concerns.

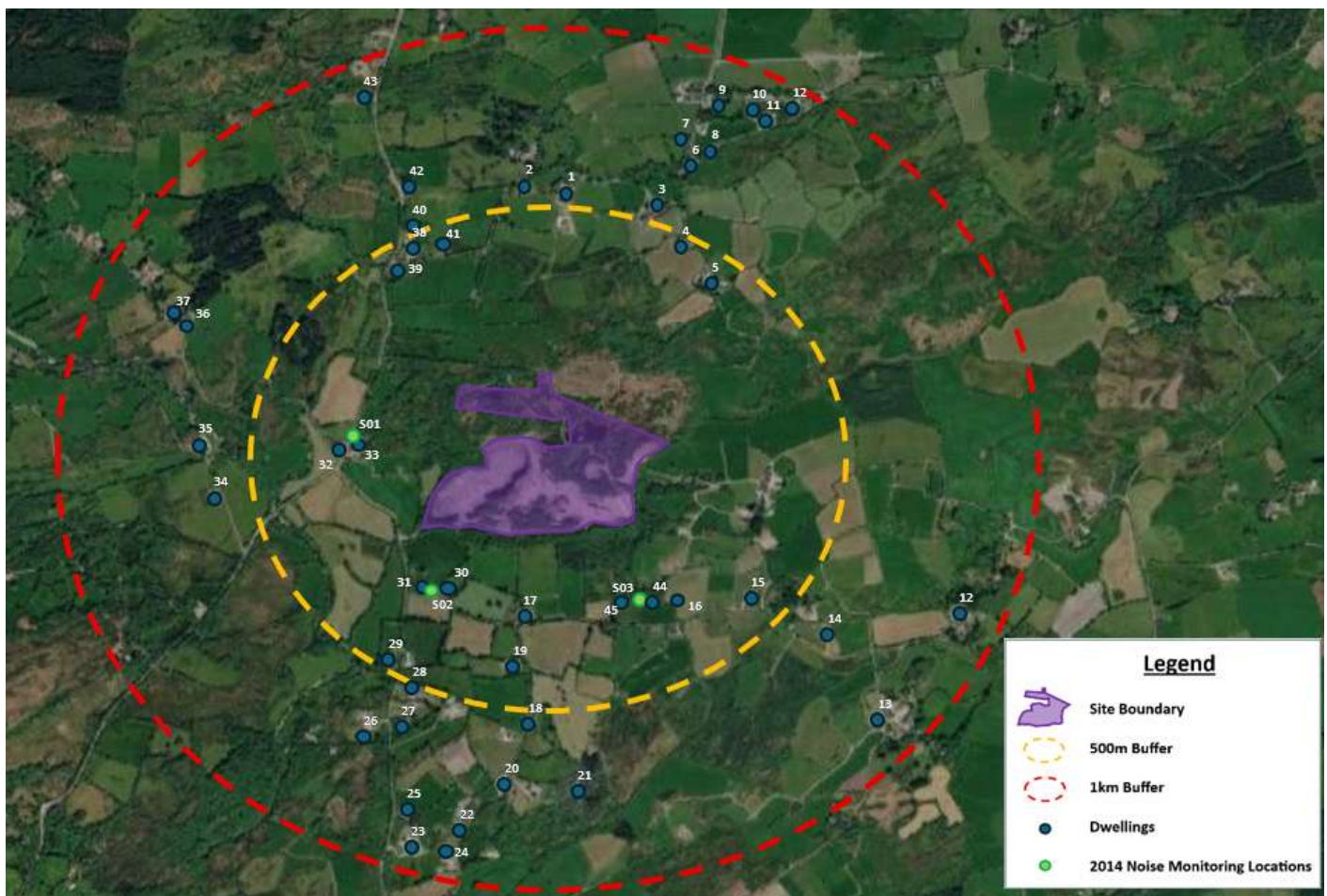
Yours sincerely,



BRIAN S. JOHNSON
Acoustic Specialist

APPENDIX A

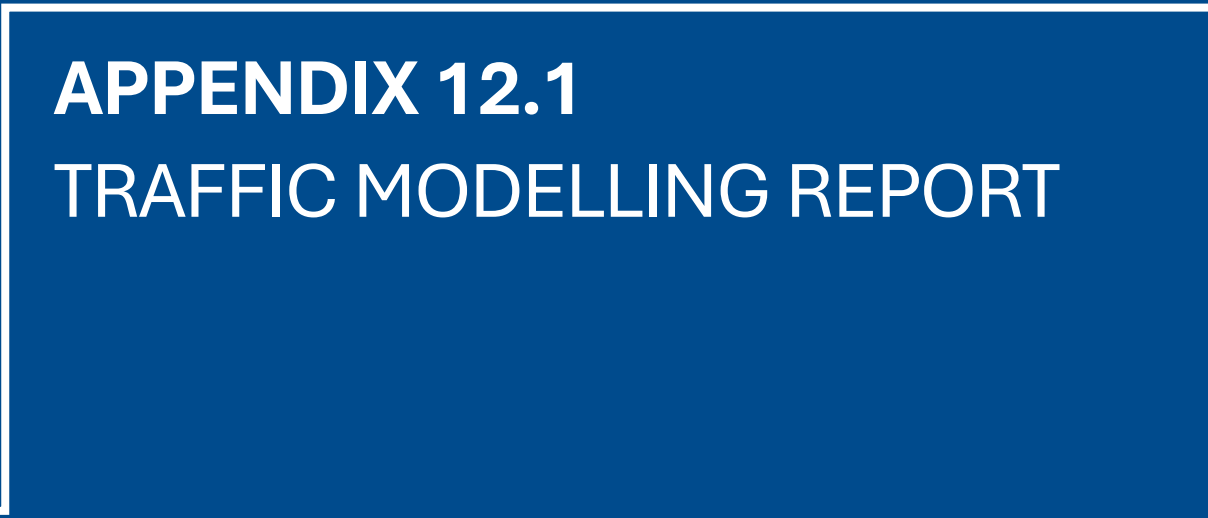
Scaled Map Identifying Each of the Nearest Noise Sensitive Receptors at Distances Of 500m& 1km From the Nearest Development Boundary in Each Direction



Appendix E – Traffic Modelling Report (Appendix 12.1 of S37L EIAR)



Murray Brothers Tarmacadam Ltd



APPENDIX 12.1

TRAFFIC MODELLING REPORT

VOLUME III
APPENDICES



APRIL 2026



Junctions 11

PICADY 11 - Priority Intersection Module

Version: 11.1.0.2307
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Filename: 23021TT- Traffic Modelling.j11

Path: N:\TIA\23021TT Ardcahan Quarry EIAR - Future Quarrying Application\Traffic Modelling

Report generation date: 16/01/2026 11:26:02

»D1 - 2026 | Base Year | AM
»D2 - 2026 | Base Year | PM
»D3 - 2027 | Op Year Without Dev | AM
»D4 - 2027 | Op Year Without Dev | PM
»D5 - 2027 | Op Year With Dev | AM
»D6 - 2027 | Op Year With Dev | PM
»D7 - 2032 | +5 without Dev | AM
»D8 - 2032 | +5 without Dev | PM
»D9 - 2032 | +5 with Dev | AM
»D10 - 2032 | +5 with Dev | PM
»D11 - 2042 | +15 without Dev | AM
»D12 - 2042 | +15 without Dev | PM
»D13 - 2042 | +15 with Dev | AM
»D14 - 2042 | +15 with Dev | PM

Summary of junction performance

	AM						PM					
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
	2026 - Base Year											
Stream B-AC	D1	0.0	6.71	0.04	A	445 %	D2	0.0	6.88	0.04	A	368 %
Stream C-AB		0.0	5.52	0.01	A	[Stream B-AC]		0.0	5.79	0.03	A	[Stream B-AC]
	2027 - Op Year Without Dev											
Stream B-AC	D3	0.0	6.73	0.04	A	433 %	D4	0.0	6.85	0.05	A	360 %
Stream C-AB		0.0	5.52	0.01	A	[Stream B-AC]		0.0	5.78	0.03	A	[Stream B-AC]
	2027 - Op Year With Dev											
Stream B-AC	D5	0.1	6.97	0.07	A	358 %	D6	0.1	7.08	0.07	A	304 %
Stream C-AB		0.0	5.56	0.02	A	[Stream B-AC]		0.0	5.83	0.04	A	[Stream B-AC]
	2032 - +5 without Dev											
Stream B-AC	D7	0.0	6.77	0.04	A	402 %	D8	0.1	6.97	0.05	A	331 %
Stream C-AB		0.0	5.50	0.01	A	[Stream B-AC]		0.0	5.78	0.03	A	[Stream B-AC]
	2032 - +5 with Dev											
Stream B-AC	D9	0.1	7.03	0.07	A	334 %	D10	0.1	7.20	0.08	A	282 %
Stream C-AB		0.0	5.54	0.02	A	[Stream B-AC]		0.1	5.83	0.04	A	[Stream B-AC]
	2042 - +15 without Dev											
Stream B-AC	D11	0.1	6.94	0.05	A	357 %	D12	0.1	7.12	0.06	A	296 %
Stream C-AB		0.0	5.48	0.02	A	[Stream B-AC]		0.0	5.77	0.03	A	[Stream B-AC]
	2042 - +15 with Dev											
Stream B-AC	D13	0.1	7.19	0.08	A	301 %	D14	0.1	7.36	0.08	A	254 %
Stream C-AB		0.0	5.52	0.02	A	[Stream B-AC]		0.1	5.82	0.04	A	[Stream B-AC]

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	16/01/2026
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MHL\bhill
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

PICADY short flare model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts
JUNCTIONS 11.1	5.75					✓	Delay	0.85	36.00	20.00		

Demand Set Summary

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2026	Base Year	AM	ONE HOUR	07:45	09:15	15	✓
D2	2026	Base Year	PM	ONE HOUR	17:15	18:45	15	✓
D3	2027	Op Year Without Dev	AM	ONE HOUR	07:45	09:15	15	✓
D4	2027	Op Year Without Dev	PM	ONE HOUR	17:15	18:45	15	✓
D5	2027	Op Year With Dev	AM	ONE HOUR	07:45	09:15	15	✓
D6	2027	Op Year With Dev	PM	ONE HOUR	17:15	18:45	15	✓
D7	2032	+5 without Dev	AM	ONE HOUR	07:45	09:15	15	✓
D8	2032	+5 without Dev	PM	ONE HOUR	17:15	18:45	15	✓
D9	2032	+5 with Dev	AM	ONE HOUR	07:45	09:15	15	✓
D10	2032	+5 with Dev	PM	ONE HOUR	17:15	18:45	15	✓
D11	2042	+15 without Dev	AM	ONE HOUR	07:45	09:15	15	✓
D12	2042	+15 without Dev	PM	ONE HOUR	17:15	18:45	15	✓
D13	2042	+15 with Dev	AM	ONE HOUR	07:45	09:15	15	✓
D14	2042	+15 with Dev	PM	ONE HOUR	17:15	18:45	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

D1 - 2026 | Base Year | AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.54	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	445	Stream B-AC	0.54	A

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	5.20			75.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	4.20	50	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	598	0.113	0.285	0.179	0.407
B-C	755	0.120	0.303	-	-
C-B	617	0.248	0.248	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2026	Base Year	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	160	100.000
B		ONE HOUR	✓	20	100.000
C		ONE HOUR	✓	143	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
	A	0	23	137
	B	15	0	5
	C	137	6	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.04	6.71	0.0	A	18	28
C-AB	0.01	5.52	0.0	A	7	10
C-A					124	187
A-B					21	32
A-C					126	189

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	15	4	0.00	581	0.026	15	0.0	0.0	6.356	A
C-AB	5	1	0.00	657	0.008	5	0.0	0.0	5.523	A
C-A	102	26	0.00			102				
A-B	17	4	0.00			17				
A-C	103	26	0.00			103				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	18	4	0.00	572	0.031	18	0.0	0.0	6.499	A
C-AB	7	2	0.00	665	0.010	7	0.0	0.0	5.466	A
C-A	122	30	0.00			122				
A-B	21	5	0.00			21				
A-C	123	31	0.00			123				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	22	6	0.00	559	0.039	22	0.0	0.0	6.709	A
C-AB	9	2	0.00	677	0.013	8	0.0	0.0	5.388	A
C-A	149	37	0.00			149				
A-B	25	6	0.00			25				
A-C	151	38	0.00			151				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	22	6	0.00	558	0.039	22	0.0	0.0	6.709	A
C-AB	9	2	0.00	677	0.013	9	0.0	0.0	5.390	A
C-A	149	37	0.00			149				
A-B	25	6	0.00			25				
A-C	151	38	0.00			151				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	18	4	0.00	572	0.031	18	0.0	0.0	6.503	A
C-AB	7	2	0.00	665	0.010	7	0.0	0.0	5.468	A
C-A	122	30	0.00			122				
A-B	21	5	0.00			21				
A-C	123	31	0.00			123				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	15	4	0.00	581	0.026	15	0.0	0.0	6.359	A
C-AB	5	1	0.00	657	0.008	5	0.0	0.0	5.523	A
C-A	102	26	0.00			102				
A-B	17	4	0.00			17				
A-C	103	26	0.00			103				

D2 - 2026 | Base Year | PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.67	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	368	Stream B-AC	0.67	A

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2026	Base Year	PM	ONE HOUR	17:15	18:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	214	100.000
B		ONE HOUR	✓	22	100.000
C		ONE HOUR	✓	122	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
	A	0	26	188
	B	16	0	6
	C	109	13	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.04	6.88	0.0	A	20	30
C-AB	0.03	5.79	0.0	A	14	21
C-A					98	147
A-B					24	36
A-C					173	259

Main Results for each time segment

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	17	4	0.00	575	0.029	16	0.0	0.0	6.446	A
C-AB	11	3	0.00	633	0.018	11	0.0	0.0	5.787	A
C-A	81	20	0.00			81				
A-B	20	5	0.00			20				
A-C	142	35	0.00			142				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	20	5	0.00	563	0.035	20	0.0	0.0	6.623	A
C-AB	14	3	0.00	637	0.022	14	0.0	0.0	5.778	A
C-A	96	24	0.00			96				
A-B	23	6	0.00			23				
A-C	169	42	0.00			169				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	24	6	0.00	547	0.044	24	0.0	0.0	6.881	A
C-AB	18	4	0.00	642	0.027	18	0.0	0.0	5.766	A
C-A	117	29	0.00			117				
A-B	29	7	0.00			29				
A-C	207	52	0.00			207				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	24	6	0.00	547	0.044	24	0.0	0.0	6.882	A
C-AB	18	4	0.00	642	0.027	18	0.0	0.0	5.769	A
C-A	117	29	0.00			117				
A-B	29	7	0.00			29				
A-C	207	52	0.00			207				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	20	5	0.00	563	0.035	20	0.0	0.0	6.627	A
C-AB	14	3	0.00	637	0.022	14	0.0	0.0	5.779	A
C-A	96	24	0.00			96				
A-B	23	6	0.00			23				
A-C	169	42	0.00			169				

18:30 - 18:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	17	4	0.00	575	0.029	17	0.0	0.0	6.450	A
C-AB	11	3	0.00	633	0.018	11	0.0	0.0	5.787	A
C-A	81	20	0.00			81				
A-B	20	5	0.00			20				
A-C	142	35	0.00			142				

D3 - 2027 | Op Year Without Dev | AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.55	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	433	Stream B-AC	0.55	A

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2027	Op Year Without Dev	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	164	100.000
B		ONE HOUR	✓	20	100.000
C		ONE HOUR	✓	147	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
	A	0	24	140
	B	15	0	5
	C	140	7	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.04	6.73	0.0	A	18	28
C-AB	0.01	5.52	0.0	A	8	12
C-A					127	190
A-B					22	33
A-C					128	193

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	15	4	0.00	580	0.026	15	0.0	0.0	6.371	A
C-AB	6	2	0.00	658	0.010	6	0.0	0.0	5.524	A
C-A	104	26	0.00			104				
A-B	18	5	0.00			18				
A-C	105	26	0.00			105				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	18	4	0.00	570	0.032	18	0.0	0.0	6.518	A
C-AB	8	2	0.00	666	0.012	8	0.0	0.0	5.467	A
C-A	124	31	0.00			124				
A-B	22	5	0.00			22				
A-C	126	31	0.00			126				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	22	6	0.00	557	0.040	22	0.0	0.0	6.734	A
C-AB	10	2	0.00	678	0.015	10	0.0	0.0	5.390	A
C-A	152	38	0.00			152				
A-B	26	7	0.00			26				
A-C	154	39	0.00			154				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	22	6	0.00	557	0.040	22	0.0	0.0	6.734	A
C-AB	10	2	0.00	678	0.015	10	0.0	0.0	5.390	A
C-A	152	38	0.00			152				
A-B	26	7	0.00			26				
A-C	154	39	0.00			154				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	18	4	0.00	570	0.032	18	0.0	0.0	6.519	A
C-AB	8	2	0.00	666	0.012	8	0.0	0.0	5.469	A
C-A	124	31	0.00			124				
A-B	22	5	0.00			22				
A-C	126	31	0.00			126				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	15	4	0.00	580	0.026	15	0.0	0.0	6.374	A
C-AB	6	2	0.00	658	0.010	6	0.0	0.0	5.524	A
C-A	104	26	0.00			104				
A-B	18	5	0.00			18				
A-C	105	26	0.00			105				

D4 - 2027 | Op Year Without Dev | PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.68	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	360	Stream B-AC	0.68	A

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2027	Op Year Without Dev	PM	ONE HOUR	17:15	18:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	218	100.000
B		ONE HOUR	✓	23	100.000
C		ONE HOUR	✓	125	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
	A	0	26	192
	B	16	0	7
	C	112	13	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.05	6.85	0.0	A	21	32
C-AB	0.03	5.78	0.0	A	14	21
C-A					100	151
A-B					24	36
A-C					176	264

Main Results for each time segment

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	17	4	0.00	578	0.030	17	0.0	0.0	6.413	A
C-AB	11	3	0.00	634	0.018	11	0.0	0.0	5.779	A
C-A	83	21	0.00			83				
A-B	20	5	0.00			20				
A-C	145	36	0.00			145				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	21	5	0.00	567	0.036	21	0.0	0.0	6.593	A
C-AB	14	3	0.00	638	0.022	14	0.0	0.0	5.769	A
C-A	98	25	0.00			98				
A-B	23	6	0.00			23				
A-C	173	43	0.00			173				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	25	6	0.00	550	0.046	25	0.0	0.0	6.854	A
C-AB	18	4	0.00	643	0.028	18	0.0	0.0	5.756	A
C-A	120	30	0.00			120				
A-B	29	7	0.00			29				
A-C	211	53	0.00			211				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	25	6	0.00	550	0.046	25	0.0	0.0	6.854	A
C-AB	18	4	0.00	643	0.028	18	0.0	0.0	5.756	A
C-A	120	30	0.00			120				
A-B	29	7	0.00			29				
A-C	211	53	0.00			211				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	21	5	0.00	567	0.036	21	0.0	0.0	6.597	A
C-AB	14	3	0.00	638	0.022	14	0.0	0.0	5.773	A
C-A	98	25	0.00			98				
A-B	23	6	0.00			23				
A-C	173	43	0.00			173				

18:30 - 18:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	17	4	0.00	578	0.030	17	0.0	0.0	6.419	A
C-AB	11	3	0.00	634	0.018	11	0.0	0.0	5.782	A
C-A	83	21	0.00			83				
A-B	20	5	0.00			20				
A-C	145	36	0.00			145				

D5 - 2027 | Op Year With Dev | AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.84	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	358	Stream B-AC	0.84	A

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2027	Op Year With Dev	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	174	100.000
B		ONE HOUR	✓	33	100.000
C		ONE HOUR	✓	150	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
From		A	B	C
	A	0	34	140
	B	25	0	8
	C	140	10	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
From		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.07	6.97	0.1	A	30	45
C-AB	0.02	5.56	0.0	A	11	17
C-A					126	189
A-B					31	47
A-C					128	193

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	25	6	0.00	577	0.043	25	0.0	0.0	6.514	A
C-AB	9	2	0.00	656	0.014	9	0.0	0.0	5.562	A
C-A	104	26	0.00			104				
A-B	26	6	0.00			26				
A-C	105	26	0.00			105				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	7	0.00	567	0.052	30	0.0	0.1	6.698	A
C-AB	11	3	0.00	664	0.017	11	0.0	0.0	5.512	A
C-A	124	31	0.00			124				
A-B	31	8	0.00			31				
A-C	126	31	0.00			126				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	36	9	0.00	553	0.066	36	0.1	0.1	6.968	A
C-AB	14	4	0.00	675	0.021	14	0.0	0.0	5.445	A
C-A	151	38	0.00			151				
A-B	37	9	0.00			37				
A-C	154	39	0.00			154				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	36	9	0.00	553	0.066	36	0.1	0.1	6.968	A
C-AB	14	4	0.00	675	0.021	14	0.0	0.0	5.447	A
C-A	151	38	0.00			151				
A-B	37	9	0.00			37				
A-C	154	39	0.00			154				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	7	0.00	567	0.052	30	0.1	0.1	6.703	A
C-AB	11	3	0.00	664	0.017	11	0.0	0.0	5.515	A
C-A	124	31	0.00			124				
A-B	31	8	0.00			31				
A-C	126	31	0.00			126				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	25	6	0.00	577	0.043	25	0.1	0.0	6.517	A
C-AB	9	2	0.00	656	0.014	9	0.0	0.0	5.562	A
C-A	104	26	0.00			104				
A-B	26	6	0.00			26				
A-C	105	26	0.00			105				

D6 - 2027 | Op Year With Dev | PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.95	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	304	Stream B-AC	0.95	A

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2027	Op Year With Dev	PM	ONE HOUR	17:15	18:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	227	100.000
B		ONE HOUR	✓	36	100.000
C		ONE HOUR	✓	129	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
From		A	B	C
	A	0	35	192
	B	25	0	11
	C	112	17	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
From		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.07	7.08	0.1	A	33	50
C-AB	0.04	5.83	0.0	A	19	28
C-A					100	149
A-B					32	48
A-C					176	264

Main Results for each time segment

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	27	7	0.00	577	0.047	27	0.0	0.0	6.546	A
C-AB	15	4	0.00	632	0.023	15	0.0	0.0	5.827	A
C-A	82	21	0.00			82				
A-B	26	7	0.00			26				
A-C	145	36	0.00			145				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	32	8	0.00	565	0.057	32	0.0	0.1	6.762	A
C-AB	18	5	0.00	636	0.029	18	0.0	0.0	5.827	A
C-A	98	24	0.00			98				
A-B	31	8	0.00			31				
A-C	173	43	0.00			173				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	40	10	0.00	548	0.072	40	0.1	0.1	7.080	A
C-AB	23	6	0.00	641	0.036	23	0.0	0.0	5.828	A
C-A	119	30	0.00			119				
A-B	39	10	0.00			39				
A-C	211	53	0.00			211				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	40	10	0.00	548	0.072	40	0.1	0.1	7.080	A
C-AB	23	6	0.00	641	0.036	23	0.0	0.0	5.829	A
C-A	119	30	0.00			119				
A-B	39	10	0.00			39				
A-C	211	53	0.00			211				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	32	8	0.00	565	0.057	32	0.1	0.1	6.764	A
C-AB	18	5	0.00	636	0.029	18	0.0	0.0	5.828	A
C-A	98	24	0.00			98				
A-B	31	8	0.00			31				
A-C	173	43	0.00			173				

18:30 - 18:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	27	7	0.00	577	0.047	27	0.1	0.0	6.553	A
C-AB	15	4	0.00	632	0.023	15	0.0	0.0	5.828	A
C-A	82	21	0.00			82				
A-B	26	7	0.00			26				
A-C	145	36	0.00			145				

D7 - 2032 | +5 without Dev | AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.56	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	402	Stream B-AC	0.56	A

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2032	+5 without Dev	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	174	100.000
B		ONE HOUR	✓	22	100.000
C		ONE HOUR	✓	156	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
	A	0	25	149
	B	16	0	6
	C	149	7	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.04	6.77	0.0	A	20	30
C-AB	0.01	5.50	0.0	A	8	12
C-A					135	203
A-B					23	34
A-C					137	205

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	17	4	0.00	580	0.029	16	0.0	0.0	6.381	A
C-AB	6	2	0.00	661	0.010	6	0.0	0.0	5.501	A
C-A	111	28	0.00			111				
A-B	19	5	0.00			19				
A-C	112	28	0.00			112				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	20	5	0.00	570	0.035	20	0.0	0.0	6.542	A
C-AB	8	2	0.00	670	0.012	8	0.0	0.0	5.440	A
C-A	132	33	0.00			132				
A-B	22	6	0.00			22				
A-C	134	33	0.00			134				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	24	6	0.00	556	0.044	24	0.0	0.0	6.774	A
C-AB	10	3	0.00	682	0.015	10	0.0	0.0	5.357	A
C-A	162	40	0.00			162				
A-B	28	7	0.00			28				
A-C	164	41	0.00			164				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	24	6	0.00	556	0.044	24	0.0	0.0	6.774	A
C-AB	10	3	0.00	682	0.015	10	0.0	0.0	5.359	A
C-A	162	40	0.00			162				
A-B	28	7	0.00			28				
A-C	164	41	0.00			164				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	20	5	0.00	570	0.035	20	0.0	0.0	6.545	A
C-AB	8	2	0.00	670	0.012	8	0.0	0.0	5.442	A
C-A	132	33	0.00			132				
A-B	22	6	0.00			22				
A-C	134	33	0.00			134				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	17	4	0.00	580	0.029	17	0.0	0.0	6.384	A
C-AB	6	2	0.00	661	0.010	6	0.0	0.0	5.503	A
C-A	111	28	0.00			111				
A-B	19	5	0.00			19				
A-C	112	28	0.00			112				

D8 - 2032 | +5 without Dev | PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.68	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	331	Stream B-AC	0.68	A

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2032	+5 without Dev	PM	ONE HOUR	17:15	18:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	233	100.000
B		ONE HOUR	✓	24	100.000
C		ONE HOUR	✓	133	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
	A	0	28	205
	B	17	0	7
	C	119	14	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.05	6.97	0.1	A	22	33
C-AB	0.03	5.78	0.0	A	16	23
C-A					106	160
A-B					26	39
A-C					188	282

Main Results for each time segment

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	18	5	0.00	572	0.032	18	0.0	0.0	6.492	A
C-AB	12	3	0.00	635	0.019	12	0.0	0.0	5.780	A
C-A	88	22	0.00			88				
A-B	21	5	0.00			21				
A-C	154	39	0.00			154				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	22	5	0.00	560	0.039	22	0.0	0.0	6.688	A
C-AB	15	4	0.00	639	0.024	15	0.0	0.0	5.770	A
C-A	104	26	0.00			104				
A-B	25	6	0.00			25				
A-C	184	46	0.00			184				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	26	7	0.00	542	0.049	26	0.0	0.1	6.975	A
C-AB	19	5	0.00	645	0.030	19	0.0	0.0	5.757	A
C-A	127	32	0.00			127				
A-B	31	8	0.00			31				
A-C	226	56	0.00			226				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	26	7	0.00	542	0.049	26	0.1	0.1	6.975	A
C-AB	19	5	0.00	645	0.030	19	0.0	0.0	5.759	A
C-A	127	32	0.00			127				
A-B	31	8	0.00			31				
A-C	226	56	0.00			226				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	22	5	0.00	560	0.039	22	0.1	0.0	6.691	A
C-AB	15	4	0.00	639	0.024	15	0.0	0.0	5.771	A
C-A	104	26	0.00			104				
A-B	25	6	0.00			25				
A-C	184	46	0.00			184				

18:30 - 18:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	18	5	0.00	572	0.032	18	0.0	0.0	6.498	A
C-AB	12	3	0.00	635	0.019	12	0.0	0.0	5.781	A
C-A	88	22	0.00			88				
A-B	21	5	0.00			21				
A-C	154	39	0.00			154				

D9 - 2032 | +5 with Dev | AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.84	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	334	Stream B-AC	0.84	A

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2032	+5 with Dev	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	184	100.000
B		ONE HOUR	✓	35	100.000
C		ONE HOUR	✓	159	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
From		A	B	C
	A	0	35	149
	B	26	0	9
	C	149	10	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
From		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.07	7.03	0.1	A	32	48
C-AB	0.02	5.54	0.0	A	12	17
C-A					134	201
A-B					32	48
A-C					137	205

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	26	7	0.00	576	0.046	26	0.0	0.0	6.541	A
C-AB	9	2	0.00	659	0.014	9	0.0	0.0	5.538	A
C-A	111	28	0.00			111				
A-B	26	7	0.00			26				
A-C	112	28	0.00			112				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	31	8	0.00	566	0.056	31	0.0	0.1	6.739	A
C-AB	11	3	0.00	668	0.017	11	0.0	0.0	5.485	A
C-A	132	33	0.00			132				
A-B	31	8	0.00			31				
A-C	134	33	0.00			134				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	39	10	0.00	551	0.070	38	0.1	0.1	7.028	A
C-AB	15	4	0.00	680	0.021	15	0.0	0.0	5.412	A
C-A	161	40	0.00			161				
A-B	39	10	0.00			39				
A-C	164	41	0.00			164				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	39	10	0.00	551	0.070	39	0.1	0.1	7.028	A
C-AB	15	4	0.00	680	0.021	15	0.0	0.0	5.414	A
C-A	161	40	0.00			161				
A-B	39	10	0.00			39				
A-C	164	41	0.00			164				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	31	8	0.00	566	0.056	32	0.1	0.1	6.743	A
C-AB	11	3	0.00	668	0.017	11	0.0	0.0	5.487	A
C-A	132	33	0.00			132				
A-B	31	8	0.00			31				
A-C	134	33	0.00			134				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	26	7	0.00	576	0.046	26	0.1	0.0	6.548	A
C-AB	9	2	0.00	659	0.014	9	0.0	0.0	5.539	A
C-A	111	28	0.00			111				
A-B	26	7	0.00			26				
A-C	112	28	0.00			112				

D10 - 2032 | +5 with Dev | PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.95	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	282	Stream B-AC	0.95	A

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2032	+5 with Dev	PM	ONE HOUR	17:15	18:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	242	100.000
B		ONE HOUR	✓	37	100.000
C		ONE HOUR	✓	137	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
From		A	B	C
	A	0	37	205
	B	26	0	11
	C	119	18	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
From		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.08	7.20	0.1	A	34	51
C-AB	0.04	5.83	0.1	A	20	30
C-A					106	158
A-B					34	51
A-C					188	282

Main Results for each time segment

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	28	7	0.00	571	0.049	28	0.0	0.1	6.620	A
C-AB	16	4	0.00	633	0.025	16	0.0	0.0	5.828	A
C-A	87	22	0.00			87				
A-B	28	7	0.00			28				
A-C	154	39	0.00			154				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	33	8	0.00	559	0.060	33	0.1	0.1	6.853	A
C-AB	19	5	0.00	637	0.031	19	0.0	0.0	5.828	A
C-A	104	26	0.00			104				
A-B	33	8	0.00			33				
A-C	184	46	0.00			184				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	41	10	0.00	541	0.075	41	0.1	0.1	7.199	A
C-AB	25	6	0.00	642	0.039	25	0.0	0.1	5.830	A
C-A	126	31	0.00			126				
A-B	41	10	0.00			41				
A-C	226	56	0.00			226				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	41	10	0.00	541	0.075	41	0.1	0.1	7.199	A
C-AB	25	6	0.00	642	0.039	25	0.1	0.1	5.833	A
C-A	126	31	0.00			126				
A-B	41	10	0.00			41				
A-C	226	56	0.00			226				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	33	8	0.00	558	0.060	33	0.1	0.1	6.857	A
C-AB	19	5	0.00	637	0.031	20	0.1	0.0	5.832	A
C-A	104	26	0.00			104				
A-B	33	8	0.00			33				
A-C	184	46	0.00			184				

18:30 - 18:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	28	7	0.00	571	0.049	28	0.1	0.1	6.627	A
C-AB	16	4	0.00	633	0.025	16	0.0	0.0	5.831	A
C-A	87	22	0.00			87				
A-B	28	7	0.00			28				
A-C	154	39	0.00			154				

D11 - 2042 | +15 without Dev | AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.58	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	357	Stream B-AC	0.58	A

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D11	2042	+15 without Dev	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	190	100.000
B		ONE HOUR	✓	24	100.000
C		ONE HOUR	✓	170	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
From		A	B	C
	A	0	28	162
	B	18	0	6
	C	162	8	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
From		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.05	6.94	0.1	A	22	33
C-AB	0.02	5.48	0.0	A	9	14
C-A					147	220
A-B					26	39
A-C					149	223

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	18	5	0.00	572	0.032	18	0.0	0.0	6.495	A
C-AB	7	2	0.00	665	0.011	7	0.0	0.0	5.477	A
C-A	121	30	0.00			121				
A-B	21	5	0.00			21				
A-C	122	30	0.00			122				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	22	5	0.00	561	0.038	22	0.0	0.0	6.677	A
C-AB	9	2	0.00	674	0.014	9	0.0	0.0	5.412	A
C-A	144	36	0.00			144				
A-B	25	6	0.00			25				
A-C	146	36	0.00			146				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	26	7	0.00	545	0.049	26	0.0	0.1	6.943	A
C-AB	12	3	0.00	688	0.017	12	0.0	0.0	5.324	A
C-A	175	44	0.00			175				
A-B	31	8	0.00			31				
A-C	178	45	0.00			178				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	26	7	0.00	545	0.049	26	0.1	0.1	6.943	A
C-AB	12	3	0.00	688	0.017	12	0.0	0.0	5.326	A
C-A	175	44	0.00			175				
A-B	31	8	0.00			31				
A-C	178	45	0.00			178				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	22	5	0.00	561	0.038	22	0.1	0.0	6.681	A
C-AB	9	2	0.00	674	0.014	9	0.0	0.0	5.415	A
C-A	144	36	0.00			144				
A-B	25	6	0.00			25				
A-C	146	36	0.00			146				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	18	5	0.00	572	0.032	18	0.0	0.0	6.501	A
C-AB	7	2	0.00	665	0.011	7	0.0	0.0	5.480	A
C-A	121	30	0.00			121				
A-B	21	5	0.00			21				
A-C	122	30	0.00			122				

D12 - 2042 | +15 without Dev | PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.71	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	296	Stream B-AC	0.71	A

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2042	+15 without Dev	PM	ONE HOUR	17:15	18:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	252	100.000
B		ONE HOUR	✓	27	100.000
C		ONE HOUR	✓	144	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
From		A	B	C
	A	0	30	222
	B	19	0	8
	C	129	15	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
From		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.06	7.12	0.1	A	25	37
C-AB	0.03	5.77	0.0	A	17	26
C-A					115	173
A-B					28	41
A-C					204	306

Main Results for each time segment

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	20	5	0.00	568	0.036	20	0.0	0.0	6.573	A
C-AB	13	3	0.00	637	0.021	13	0.0	0.0	5.773	A
C-A	95	24	0.00			95				
A-B	23	6	0.00			23				
A-C	167	42	0.00			167				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	24	6	0.00	554	0.044	24	0.0	0.0	6.792	A
C-AB	16	4	0.00	641	0.026	16	0.0	0.0	5.762	A
C-A	113	28	0.00			113				
A-B	27	7	0.00			27				
A-C	200	50	0.00			200				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	7	0.00	535	0.056	30	0.0	0.1	7.117	A
C-AB	21	5	0.00	647	0.033	21	0.0	0.0	5.747	A
C-A	137	34	0.00			137				
A-B	33	8	0.00			33				
A-C	244	61	0.00			244				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	7	0.00	535	0.056	30	0.1	0.1	7.117	A
C-AB	21	5	0.00	647	0.033	21	0.0	0.0	5.750	A
C-A	137	34	0.00			137				
A-B	33	8	0.00			33				
A-C	244	61	0.00			244				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	24	6	0.00	554	0.044	24	0.1	0.0	6.796	A
C-AB	16	4	0.00	641	0.026	17	0.0	0.0	5.763	A
C-A	113	28	0.00			113				
A-B	27	7	0.00			27				
A-C	200	50	0.00			200				

18:30 - 18:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	20	5	0.00	568	0.036	20	0.0	0.0	6.579	A
C-AB	13	3	0.00	637	0.021	13	0.0	0.0	5.774	A
C-A	95	24	0.00			95				
A-B	23	6	0.00			23				
A-C	167	42	0.00			167				

D13 - 2042 | +15 with Dev | AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.84	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	301	Stream B-AC	0.84	A

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D13	2042	+15 with Dev	AM	ONE HOUR	07:45	09:15	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	200	100.000
B		ONE HOUR	✓	37	100.000
C		ONE HOUR	✓	173	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
	A	0	38	162
	B	28	0	9
	C	162	11	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.08	7.19	0.1	A	34	51
C-AB	0.02	5.52	0.0	A	13	20
C-A					146	219
A-B					35	52
A-C					149	223

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	28	7	0.00	569	0.049	28	0.0	0.1	6.644	A
C-AB	10	3	0.00	663	0.015	10	0.0	0.0	5.515	A
C-A	120	30	0.00			120				
A-B	29	7	0.00			29				
A-C	122	30	0.00			122				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	33	8	0.00	558	0.060	33	0.1	0.1	6.865	A
C-AB	13	3	0.00	672	0.019	13	0.0	0.0	5.457	A
C-A	143	36	0.00			143				
A-B	34	9	0.00			34				
A-C	146	36	0.00			146				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	41	10	0.00	541	0.075	41	0.1	0.1	7.191	A
C-AB	16	4	0.00	685	0.024	16	0.0	0.0	5.379	A
C-A	174	44	0.00			174				
A-B	42	10	0.00			42				
A-C	178	45	0.00			178				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	41	10	0.00	541	0.075	41	0.1	0.1	7.191	A
C-AB	16	4	0.00	685	0.024	16	0.0	0.0	5.382	A
C-A	174	44	0.00			174				
A-B	42	10	0.00			42				
A-C	178	45	0.00			178				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	33	8	0.00	558	0.060	33	0.1	0.1	6.869	A
C-AB	13	3	0.00	672	0.019	13	0.0	0.0	5.460	A
C-A	143	36	0.00			143				
A-B	34	9	0.00			34				
A-C	146	36	0.00			146				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	28	7	0.00	569	0.049	28	0.1	0.1	6.651	A
C-AB	10	3	0.00	663	0.015	10	0.0	0.0	5.516	A
C-A	120	30	0.00			120				
A-B	29	7	0.00			29				
A-C	122	30	0.00			122				

D14 - 2042 | +15 with Dev | PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.96	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	254	Stream B-AC	0.96	A

Traffic Demand

Demand Set Details

ID	Year	Scenario	Time period	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D14	2042	+15 with Dev	PM	ONE HOUR	17:15	18:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	261	100.000
B		ONE HOUR	✓	40	100.000
C		ONE HOUR	✓	148	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
	A	0	39	222
	B	28	0	12
	C	129	19	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.08	7.36	0.1	A	37	55
C-AB	0.04	5.82	0.1	A	22	32
C-A					114	171
A-B					36	54
A-C					204	306

Main Results for each time segment

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	8	0.00	567	0.053	30	0.0	0.1	6.705	A
C-AB	17	4	0.00	635	0.027	17	0.0	0.0	5.821	A
C-A	95	24	0.00			95				
A-B	29	7	0.00			29				
A-C	167	42	0.00			167				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	36	9	0.00	553	0.065	36	0.1	0.1	6.967	A
C-AB	21	5	0.00	639	0.033	21	0.0	0.0	5.821	A
C-A	112	28	0.00			112				
A-B	35	9	0.00			35				
A-C	200	50	0.00			200				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	44	11	0.00	533	0.083	44	0.1	0.1	7.355	A
C-AB	27	7	0.00	645	0.042	27	0.0	0.1	5.821	A
C-A	136	34	0.00			136				
A-B	43	11	0.00			43				
A-C	244	61	0.00			244				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	44	11	0.00	533	0.083	44	0.1	0.1	7.356	A
C-AB	27	7	0.00	645	0.042	27	0.1	0.1	5.824	A
C-A	136	34	0.00			136				
A-B	43	11	0.00			43				
A-C	244	61	0.00			244				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	36	9	0.00	553	0.065	36	0.1	0.1	6.972	A
C-AB	21	5	0.00	639	0.033	21	0.1	0.0	5.822	A
C-A	112	28	0.00			112				
A-B	35	9	0.00			35				
A-C	200	50	0.00			200				

18:30 - 18:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	8	0.00	566	0.053	30	0.1	0.1	6.715	A
C-AB	17	4	0.00	635	0.027	17	0.0	0.0	5.825	A
C-A	95	24	0.00			95				
A-B	29	7	0.00			29				
A-C	167	42	0.00			167				

Appendix F – Viridus Response Letter, including Water Framework Directive Assessment



For the Attention of:

Saoirse Kavanagh, Executive Planning Consultant,
McCutcheon Halley, Chartered Planning Consultants,
6 Joyce House, Barrack Square,
Ballincollig, County Cork.

Date: 10th August 2026

Subject:- Ardcahan Quarry Application for Substitute Consent - Water Framework Directive Information

Dear Saoirse,

As per your recent request, in response to the Cork Co. Council (CCC) report to An Comisiún Pleanála, (ACP), on the Ardcahan Quarry Substitute Consent Application by Murray Brothers Tarmacadam Ltd., (MBT), for the historic quarrying of sandstone bedrock that took place between Feb 1990 and Oct 2014, (along with associated site development works), at Ardcahan, near Dunmanway in Co. Cork, VCL have reviewed Chapter 7 (Hydrology and Hydrogeology) of the remedial Environmental Impact Assessment Report (rEIAR) with a view to reporting the aspects specifically pertaining to the requirements of the Water Framework Directive (WFD), and present that information below.

Background

The overall MBT landholding is 25.2 hectares (ha) while the footprint of the Substitute Consent area is about 15.2 ha with a 1990 quarry area of 4.72 ha and a total extraction area between 1990 to 2014 of 5.94 ha. There has been no extraction or quarrying at the site since October 2014.

The EU Water Framework Directive (2000/60/EC), as amended by Directives 2008/105/EC, 2013/39/EU and 2014/101/EU, was signed into law in October 2000. It requires EU member States to achieve water quality of at least *Good Status* in rivers, lakes, groundwater, estuaries and coastal waters by 2027 at the latest. The Directive was transposed into Irish law by the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003). The Directive requires that management plans, based on River Basin Districts (RBD), be prepared on a river basin basis and specifies a structured method for developing these plans.

The WFD is implemented through the River Basin Management Plans (RBMP) in 6-year cycles. WFD Cycle 1 covered the period 2010 – 2015; WFD Cycle 2 covered the period 2016 – 2021; and WFD Cycle 3 covers the period 2022 – 2027. The local authorities coordinate water quality management across a five region structure and the directive includes surface waters and groundwaters.

Under the WFD water quality of River Basin Districts is assessed biologically, physically and chemically. Assessment is done using surveys that are predominately conducted by the EPA, local authorities and complemented by other government bodies including Inland Fisheries.

Retrospectively the WFD Cycle 1 (2010 to 2015) and Cycle 2 (2016 to 2021) are the periods relevant for the Subsequent Consent Application as quarrying was undertaken prior to the WFD commencement up to 2014.



Contact Details: - Mobile +353 87 650 3582 darragh.musgrave@viridus.ie

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Registered office :- Quintas Partners, Heron House, Blackpool Park, Blackpool, Cork, Ireland.



WFD Water Bodies

The Ardcahan Quarry site is situated in the South Western River Basin District (SWRBD) and the river catchments are located within Hydrometric Area (HA) No. 20 (Bandon-Ilen ID 20) as defined by the Water Framework Directive (WFD).

The sub-catchment for the rivers to the northwest of Dunmanway is identified by the EPA as Bandon_SC_10 with the majority of the quarry site located with the Sub Basin Bandon_020 catchment which covers an area of 48.34km². A small section of the northern boundary of the site is located on the southern boundary of the Sub Basin Caha_20 catchment. (Note that EPA Catchment Maps are presented in Appendix 7.1 of the rEIAR.)

The main hydrological feature near the site is a small unnamed stream that flows along the sites eastern and southern boundaries. This small watercourse, (identified as the boundary stream), has an estimated catchment area of about one square kilometre (1km²) of which the site area occupies approximately 25%. The remainder of the catchment is occupied by upland agricultural grassland and scrub vegetation.

The stream flows adjacent to the site close to its eastern and southern boundaries and reaches the Bandon River about 500m to the southwest of the quarry site. Refer to Figure 1.

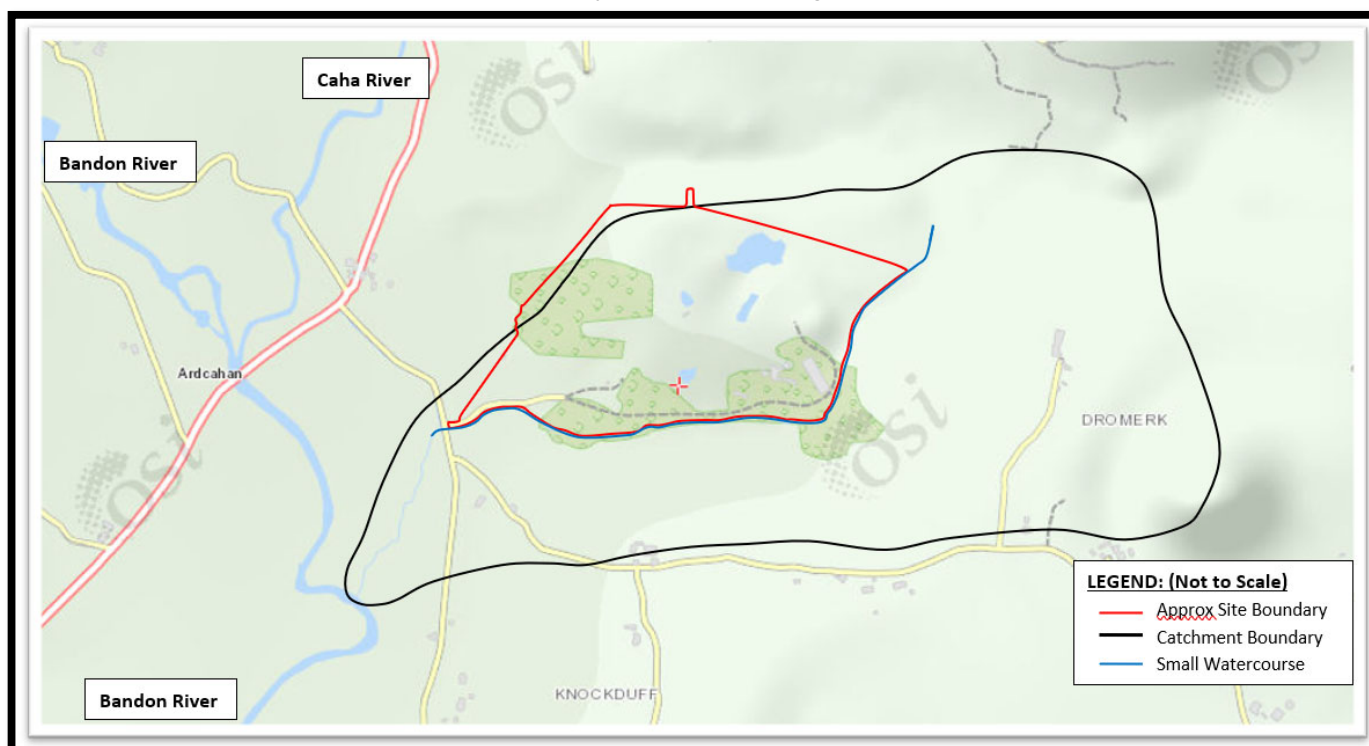


Figure 1: Hydrological Features including the local catchment area of the adjacent 'Boundary Stream'.



Contact Details: - Mobile +353 87 650 3582 darragh.musgrave@viridus.ie

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Registered office :- Quintas Partners, Heron House, Blackpool Park, Blackpool, Cork, Ireland.



EPA WFD Water Bodies Status & Risk Mapping

The EPA web site provides access to a range of WFD maps showing the Quality Status and Risk Status for Waterbodies and Groundwater Bodies across the state for the 1st, 2nd and 3rd WFD Cycle Monitoring.

These were reviewed for the Ardcahan locality and are included in Appendix A at the end of this document.

The EPA WFD maps show that for the period that the Ardcahan quarry was in operation, up to 2014, the Water Quality Status for the local Bandon and Caha River waterbodies was 'Good'. Refer to the 2010 – 2015 and 2013 to 2018 Maps presented in Maps A.1 and A.2

Subsequently the status of the Bandon River was mapped as Moderate for the 2016 to 2021 (2nd Cycle) period, as presented in Map A.3. This deterioration occurred while no quarrying activity was taking place.

The WFD 2nd Cycle Risk Mapping indices that the Bandon River is not at Risk but the Caha is, (see Map A.4).

Assessment of the EPA WFD Pressures Maps (3rd Cycle) indicates that both River systems are At Risk from Agricultural Pressures, (see Map A.5).

The Caha River, which is upstream of the Ardcahan quarry area, is also identified to be under pressure from Extractive Industry, Hydromorphology and Other Anthropogenic Pressures.

EPA WFD Groundwater Bodies Status & Risk Mapping

The EPA 1st and 2nd Cycle mapping shows that the localities Groundwater Body, (Bandon IE_SW_G-086), had Good Status since mapping began in 2010 and that it is classified as Not at Risk. See Maps A.6 to A.8.

Conclusions

A retrospective assessment of the Ardcahan sites compliance with the WFD for the period that it was in operation, indicates that the quarrying activity completed from 1990 to 2014 did not change the quality status of the Bandon River water body as mapped for the WFD 1st Cycle to 2016 and start of the 2nd Cycle to 2018.

Similarly the Groundwater Body Quality and Risk Status did not change due to the quarrying activity to 2014.

The Bandon River water quality is primarily at risk from Agricultural Pressures and the WFD Quality Status of both the Bandon and Caha Rivers has reportedly deteriorated in recent years primarily due to increased and more intensive agricultural activity in the catchments. No groundwater risks are identified by the EPA Mapping.

Yours,



Darragh Musgrave, Senior Geo-Environmental Scientist, Viridus Consulting Ltd.

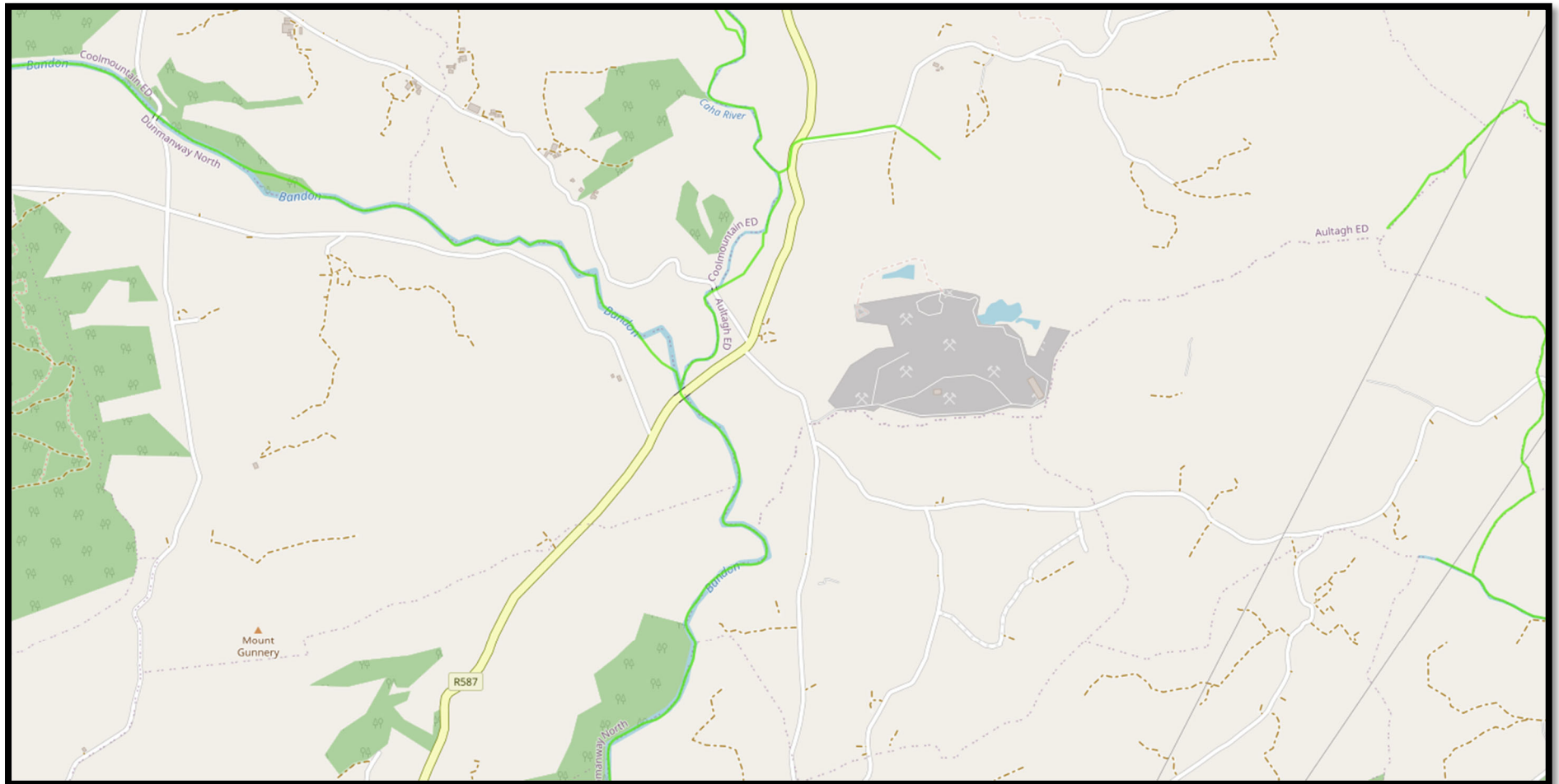
Appendix A is included below.



Contact Details: - Mobile +353 87 650 3582 darragh.musgrave@viridus.ie

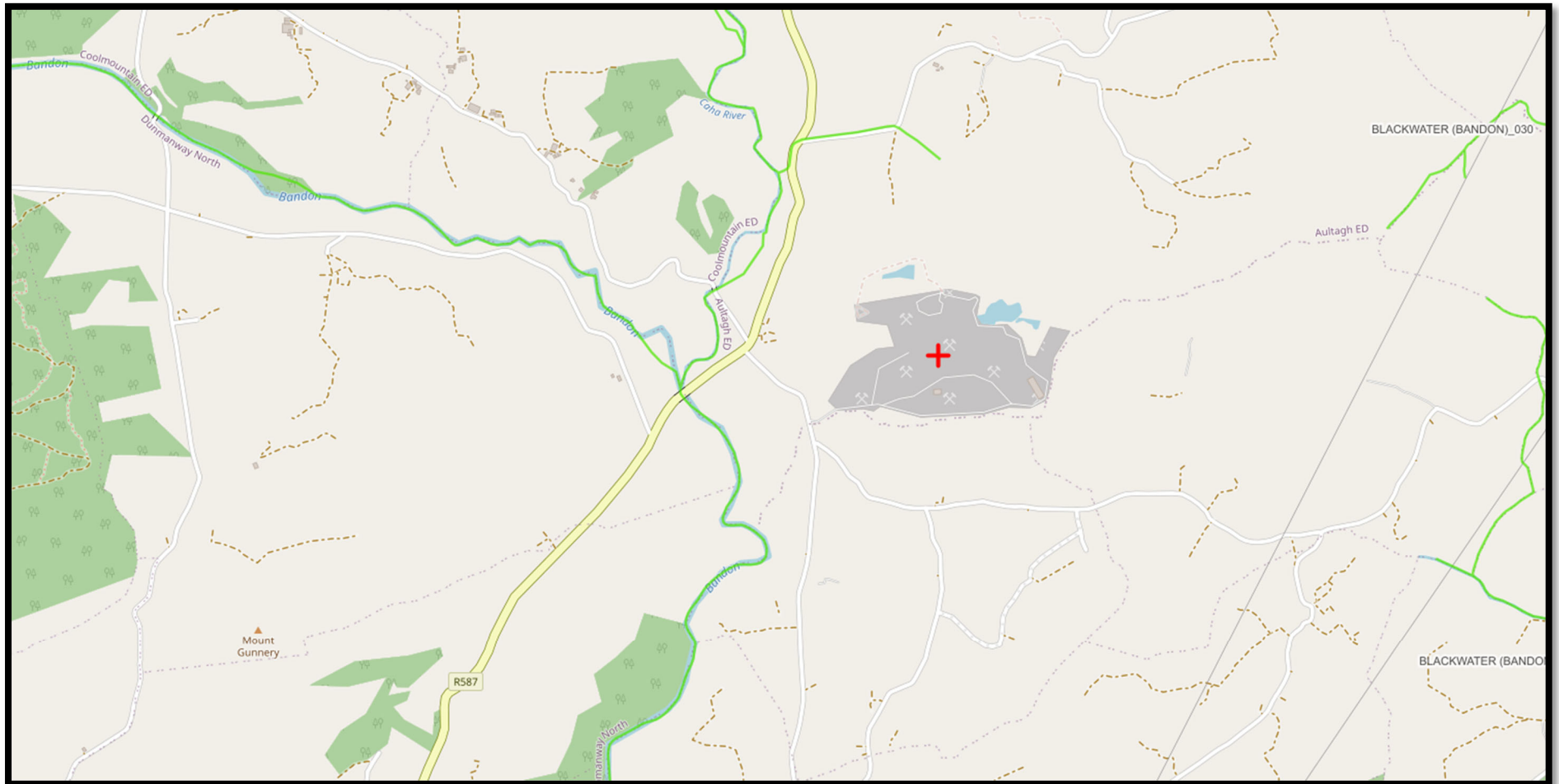
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Registered office :- Quintas Partners, Heron House, Blackpool Park, Blackpool, Cork, Ireland.

Appendix A: Ardcahan Quarry rEiAR – Water Chapter Extra WFD Map Data EPA WFD Hydrology Catchment, Water Quality and Risk Mapping



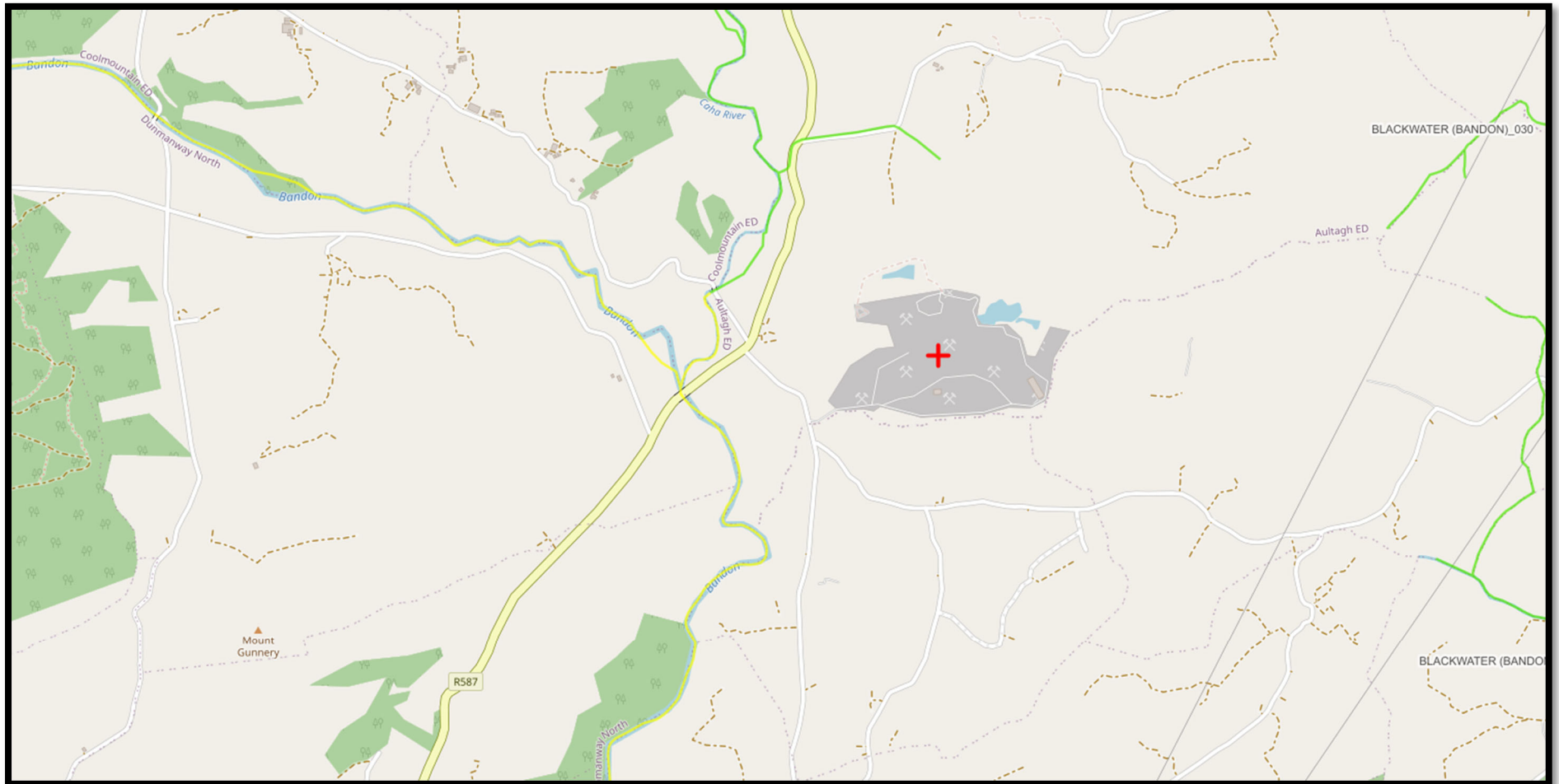
**Appendix A.1 – EPA Hydrology WFD Mapping for the 2010 to 2015 (WFD 1st Cycle) Period.
WFD Bandon_020 River and WFD Caha_020 River Segments Showing Good Quality (Green) Status.
(EPA River Quality Status Mapping 2010 to 2015 from <https://gis.epa.ie/EPAMaps/Water>.)**

Appendix A: Ardcahan Quarry rEIAR – Water Chapter Extra WFD Map Data EPA WFD Hydrology Catchment, Water Quality and Risk Mapping



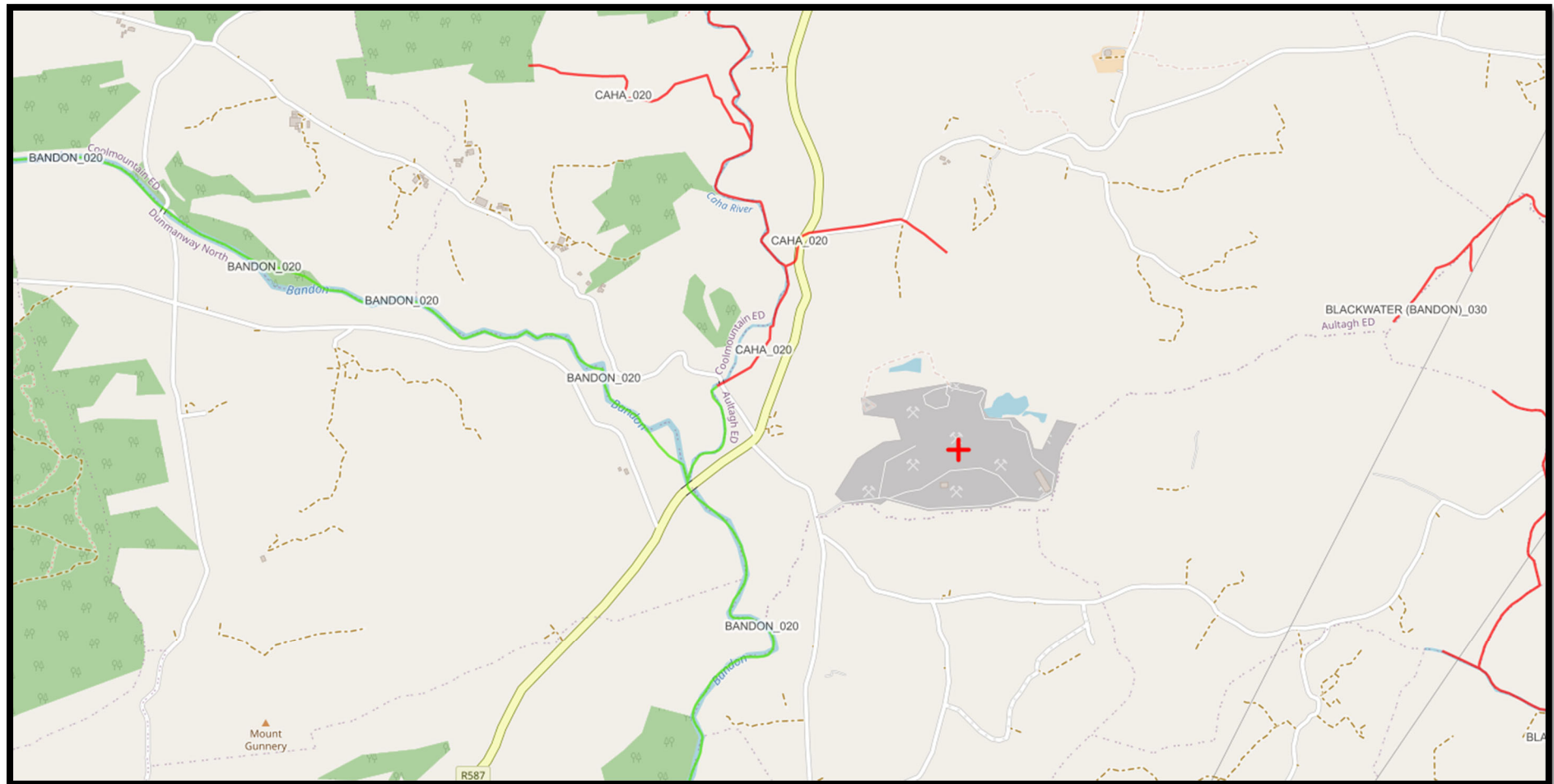
**Appendix A.2 – EPA Hydrology WFD Mapping for the 2013 to 2018 (WFD 1st & Early 2nd Cycle) Period.
WFD Bandon_020 River and WFD Caha_020 River Segments Showing Good Quality (Green) Status.
(EPA River Quality Status Mapping 2013 to 2018 from <https://gis.epa.ie/EPAMaps/Water>.)**

Appendix A: Ardcahan Quarry rEiAR – Water Chapter Extra WFD Map Data EPA WFD Hydrology Catchment, Water Quality and Risk Mapping



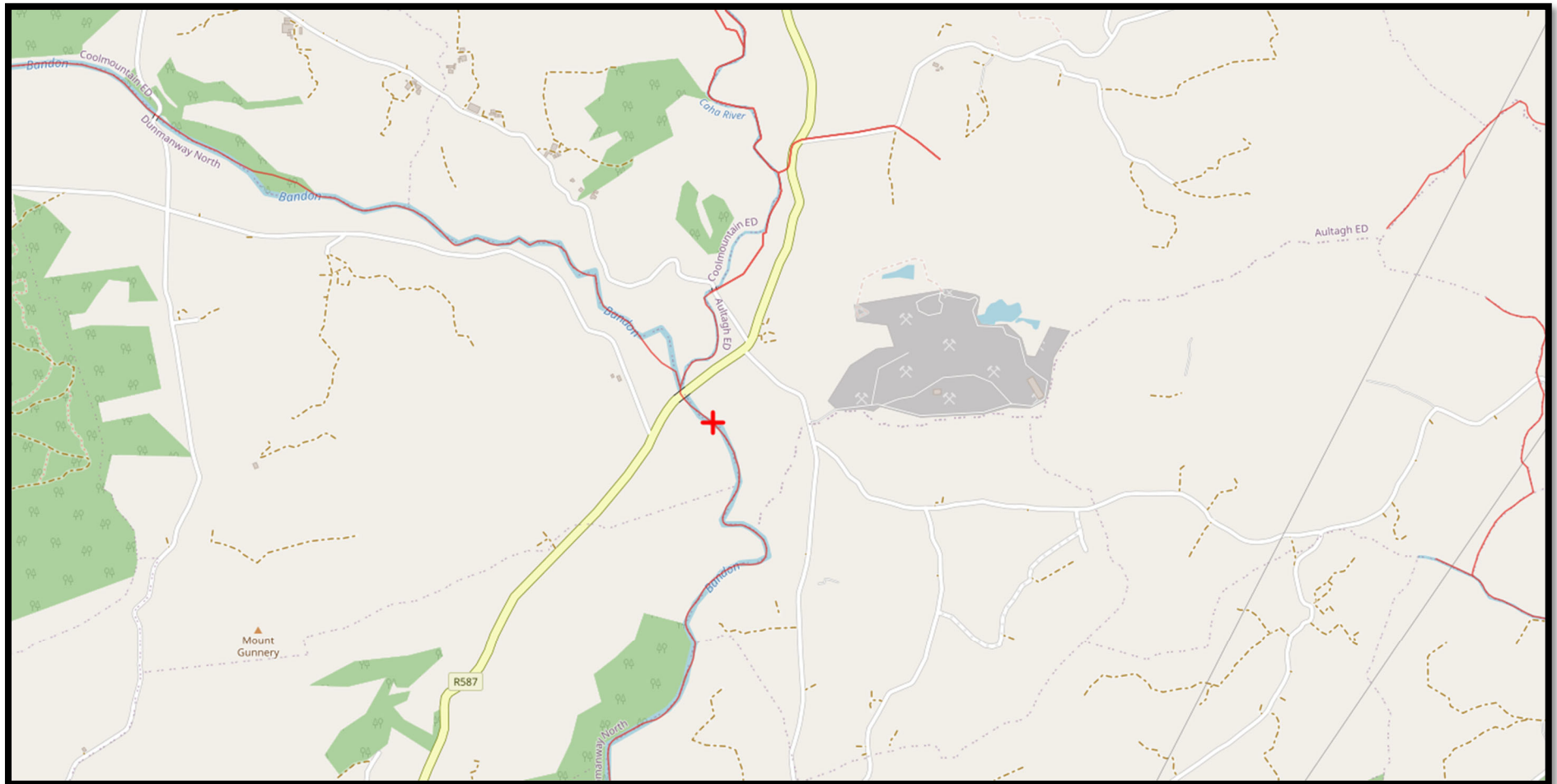
**Appendix A.3 – EPA Hydrology WFD Mapping for the 2016 to 2021 (WFD 2nd Cycle) Period.
WFD Bandon_020 River Showing Moderate Quality (Yellow) and WFD Caha_020 River Showing Good Quality (Green) Status.
(EPA River Quality Status Mapping 2016 to 2021 from <https://gis.epa.ie/EPAMaps/Water>.)**

Appendix A: Ardcahan Quarry rEiAR – Water Chapter Extra WFD Map Data EPA WFD Hydrology Catchment, Water Quality and Risk Mapping



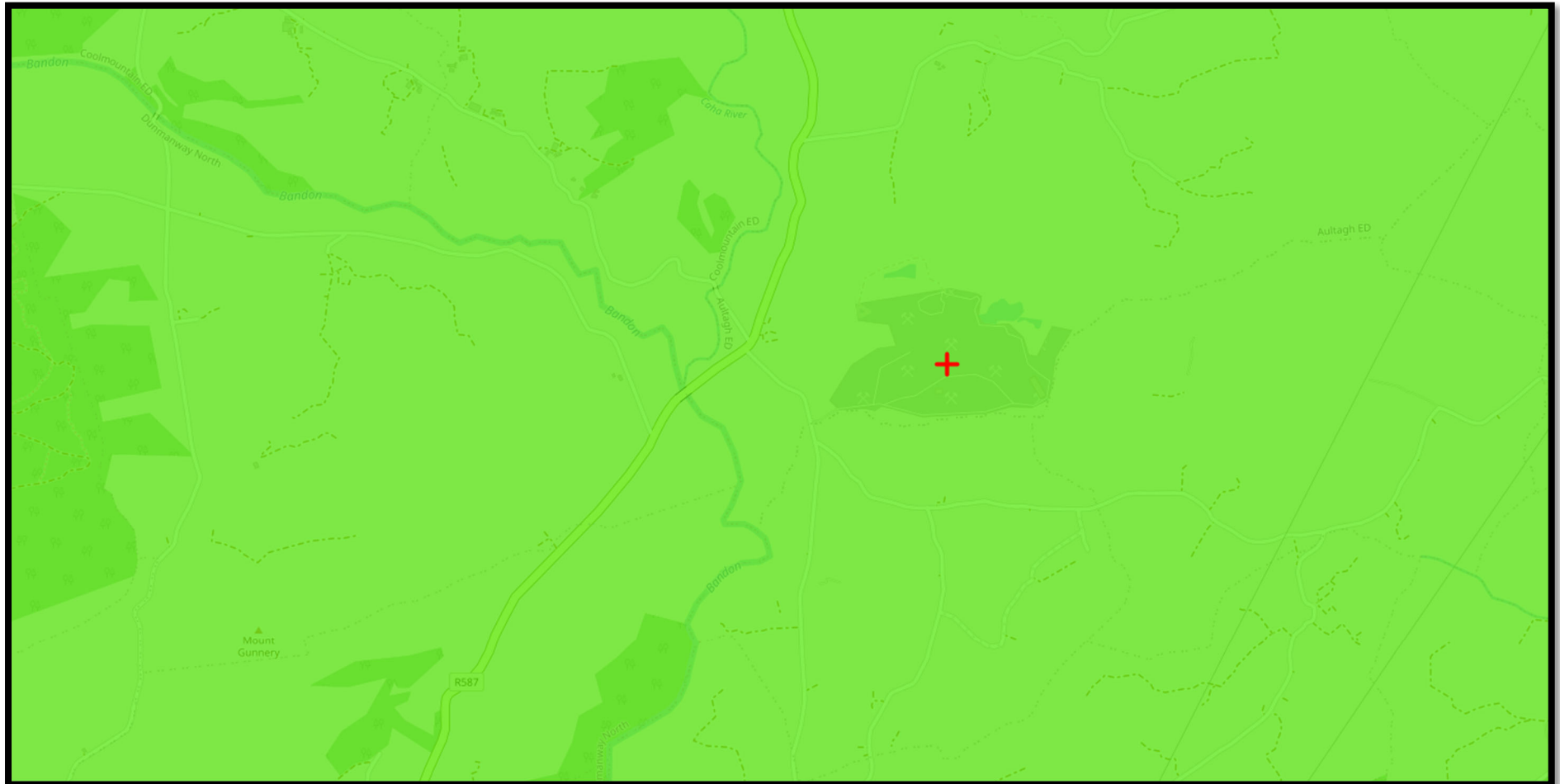
Appendix A.4 – EPA Hydrology WFD Waterbodies Risk Mapping for the WFD 2nd Cycle Period.
WFD Bandon_020 River Showing Not At Risk (Green) and WFD Caha_020 River Showing At Risk (Red).
(EPA WFD Risk 2nd Cycle Mapping from <https://gis.epa.ie/EPAMaps/Water>.)

Appendix A: Ardcahan Quarry rEIAR – Water Chapter Extra WFD Map Data EPA WFD Hydrology Catchment, Water Quality and Risk Mapping



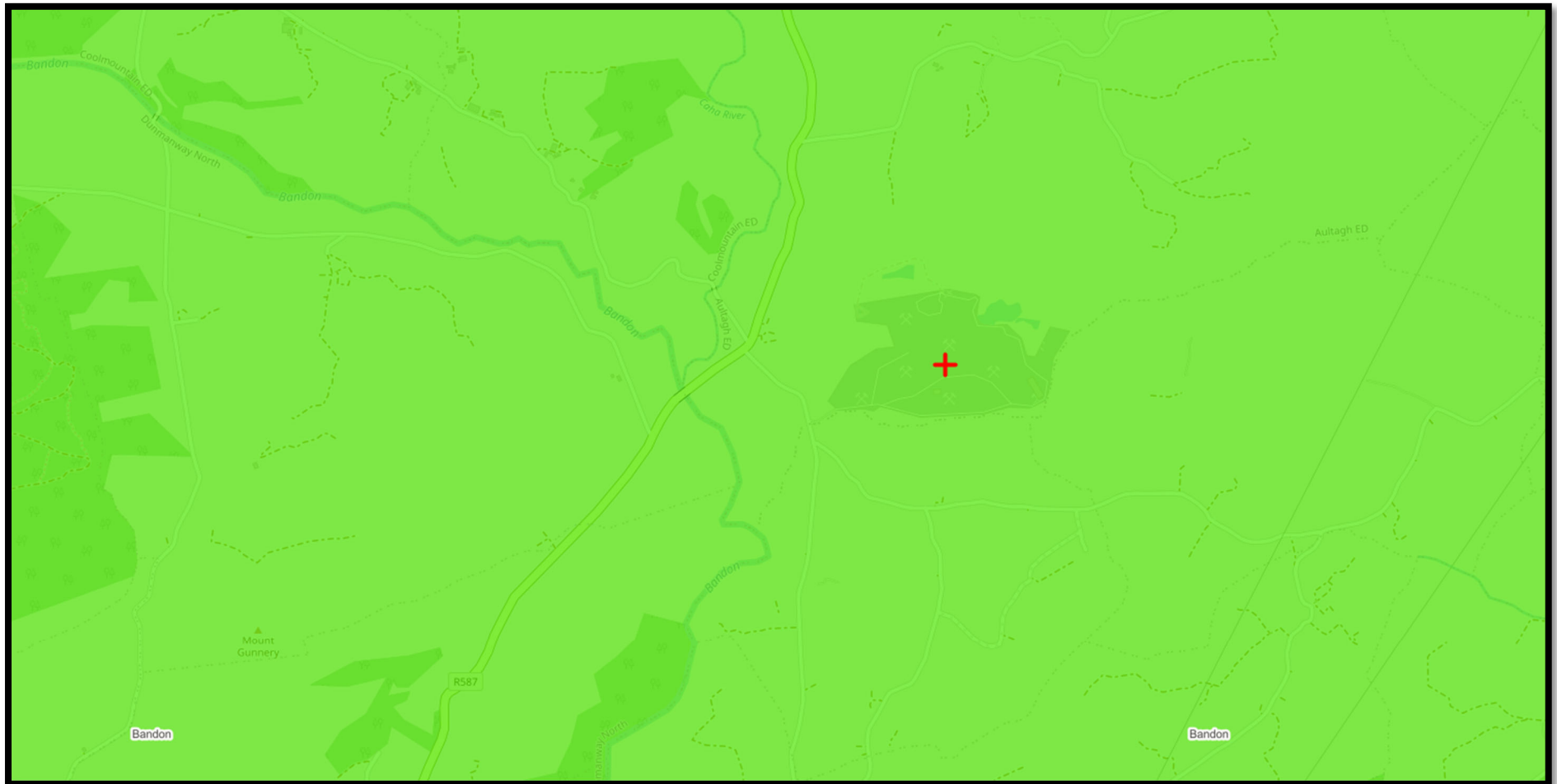
Appendix A.5 – EPA Hydrology WFD Waterbodies Pressures Mapping for the WFD 3rd Cycle Period.
WFD Bandon_020 River and WFD Caha_020 River Both Showing At Risk (Red) due to Agricultural Pressures.
(EPA WFD Waterbodies Pressures Mapping from <https://gis.epa.ie/EPAMaps/Water>.)

Appendix A: Ardcahan Quarry rEiAR – Water Chapter Extra WFD Map Data EPA WFD Hydrology Catchment, Water Quality and Risk Mapping



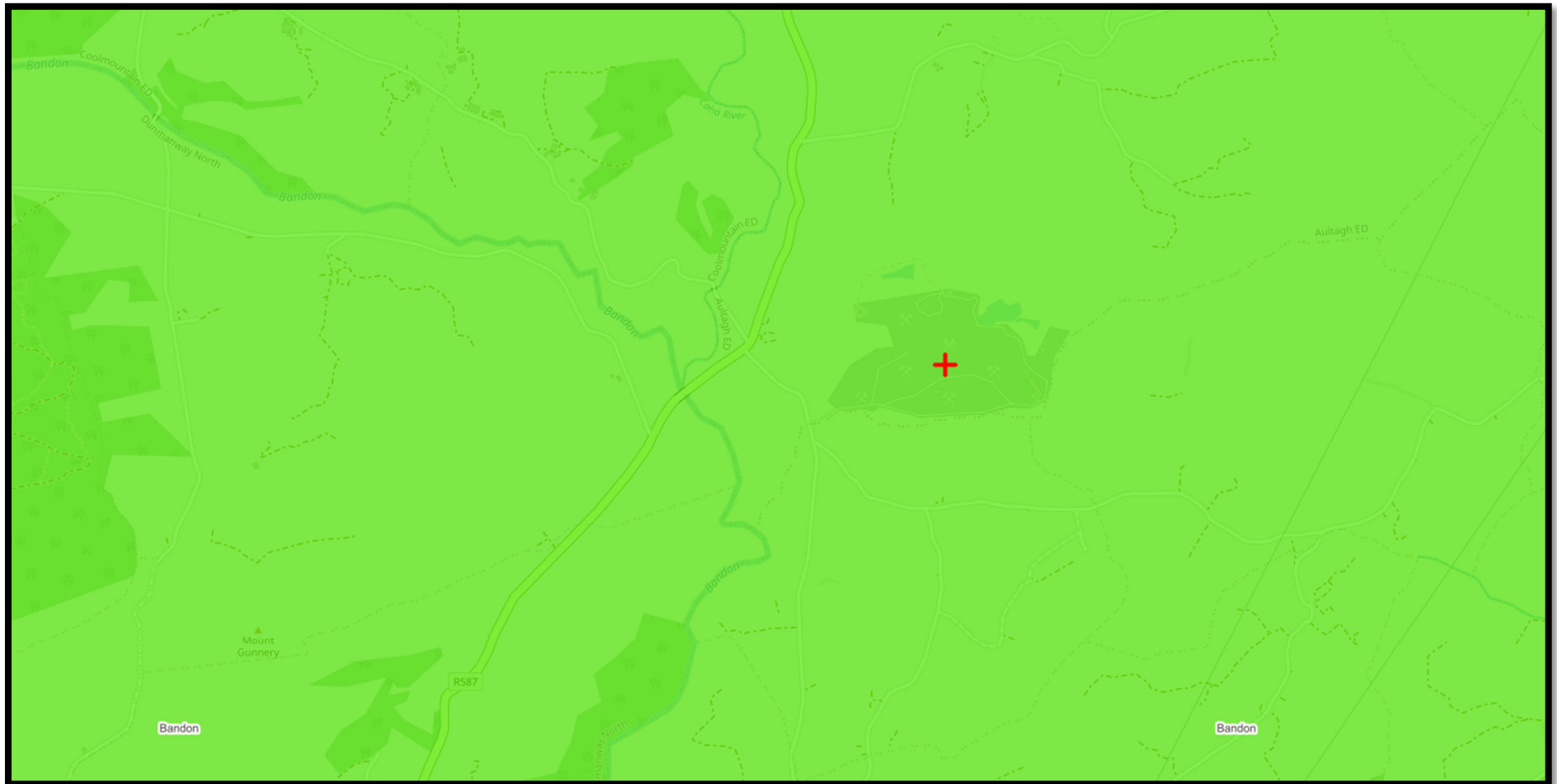
**Appendix A.6 – EPA Hydrology WFD Mapping for the 2010 to 2015 (WFD 1st Cycle) Period.
WFD Bandon Groundwater Body (Code IE_SW-G_086) Showing Good Quality (Green) Status.
(EPA WFD Groundwater Bodies Quality Status Mapping 2010 to 2015 from <https://gis.epa.ie/EPAMaps/Water>.)**

Appendix A: Ardcahan Quarry rEIAR – Water Chapter Extra WFD Map Data EPA WFD Hydrology Catchment, Water Quality and Risk Mapping



**Appendix A.7 – EPA Hydrology WFD Mapping for the 2016 to 2021 (WFD 2nd Cycle) Period.
WFD Bandon Groundwater Body (Code IE_SW-G_086) Showing Good Quality (Green) Status.
(EPA WFD Groundwater Bodies Quality Status Mapping 2016 to 2021 from <https://gis.epa.ie/EPAMaps/Water>.)**

Appendix A: Ardcahan Quarry rEiAR – Water Chapter Extra WFD Map Data EPA WFD Hydrology Catchment, Water Quality and Risk Mapping



**Appendix A.8 – EPA Hydrology WFD Mapping for the 2021 to 2027 (WFD 3rd Cycle) Period.
WFD Bandon Groundwater Body (Code IE_SW-G_086) Showing Not At Risk (Green) Status.
(EPA WFD Groundwater Bodies Risk Mapping from <https://gis.epa.ie/EPAMaps/Water>.)**