

Technical Appendix 9.3 Assessment Methodology

1.1. Introduction

1.1.1. This appendix describes the methodology by which **Chapter 9** was produced, including guidance followed and how surface water features were identified, scoped in for further examination and assessed as to their importance, and the resulting significance and magnitude of effects.

1.2. Guidance and Standards

1.2.1. The Scottish Government has published the Sewers for Scotland Manual (4th Edition, Scottish Water 2018)¹ and Planning Advice Notes to provide national guidance on various topics (see National Planning Policy section above for more detail).

1.2.2. SEPA has also produced several guidance documents covering a range of environmental issues that are relevant to this impact assessment. Those documents relevant to the water environment are:

- SEPA Interim Position Statement on Planning and Flooding (2009)²;
- SEPA Engineering Activities in The Water Environment: Good Practice Guide – River Crossings (Second edition, 2010)³; and
- SEPA Guidance on Assessing the Impacts of Development on Groundwater Abstractions (2024)⁴.

1.3. Baseline Data Collection

1.3.1. The following sources have been used to inform the baseline upon which the effects have been assessed:

- Online Ordnance Survey digital maps⁵;
- Met Office website⁶;
- SEPA website⁷;
- SNH Standing Waters Database⁸;
- Scotland's Aquaculture website⁹;
- Scotland's Environment website¹⁰;

- National River Flow Archives website¹¹;
- British Geological Society (BGS) website¹²;
- NatureScot¹³;
- Scotland's aquifers and groundwater bodies¹⁴;
- UK Centre for Ecology and Hydrology¹⁵;
- Scotland's Environment Map¹⁶; and
- SEPA National Flood Risk Assessment Map¹⁷.

1.3.2. A Freedom of Information request was also sent to SEPA who was able to provide additional data for the Study Area, received on 03 February 2026, covering:

- Surface water and groundwater quality data;
- Groundwater level data;
- Known pollution events;
- EASR licences and Abstraction licences; and
- Aquatic ecology data.

1.3.3. Private Water Supplies (PWS) data was requested from Argyll & Bute Council and received on 05 January 2026.

1.4. Assessment Methodology

1.4.1. The qualitative assessment of potential likely significant effects during the construction and operational phases of the Proposed Varied Development has been based on a source-pathway-receptor approach. For an impact on the water environment to exist, the following is required.

- An impact source or cause of effect (such as a structure over a watercourse, the release of polluting chemicals, particulate matter, or biological materials that cause harm or discomfort to humans or other living organisms, or the loss or damage to all or part of a water feature, cuttings/excavations and associated dewatering activities capable of causing temporary or permanent changes to groundwater level or flow pattern and quality (as in the case of groundwater)).
- A receptor that is sensitive to that impact (i.e. water features and the services they support) that could potentially be affected.
- A pathway by which the two are linked (i.e. all three elements must be present before a potential impact linkage can be realised).

1.4.2. The first stage in applying the source-pathway-receptor approach is to identify the causes or sources of potential impact from a development. The sources have been identified

through a review of the details of the Proposed Varied Development, including its size and nature, potential construction methodologies and timescales.

1.4.3. The next step in the approach is to undertake a review of the potential receptors; that is, the water environment receptors themselves that have the potential to be affected. Water features, including their attributes, have been identified through a desk study as discussed below.

1.4.4. The last stage of the approach is to determine if there is a viable exposure pathway or a 'mechanism' linking the source to the receptor. This is determined in the context of local conditions relative to water receptors within the Application Boundary and surrounding environments, such as topography, geology, climatic conditions, land use and the nature of the impact (e.g. the mobility of a liquid pollutant or the proximity to works that may physically impact a water feature or be a source of water pollution).

1.5. Determining Magnitude of Impact and Importance of Receptors

1.5.1. The Importance of receptors, or importance of the potentially affected water environment features has been established on the basis of a four-point scale, using the criteria presented in **Table 1** which has been modified from Design Manual for Roads and Bridges (DMRB) LA 113 Road Drainage and the Water Environment¹⁸ to include hydromorphology.

1.5.2. The Importance of receptors, or importance of the potentially affected soils features has been established on the basis of a five-point scale, using the criteria presented in **Table 1** which has been modified from DMRB LA 113 Road Drainage and the Water Environment¹⁸.

1.5.3. The magnitude of adverse or beneficial impacts has been determined by the seven-point scale presented in **Table 2**.

1.5.4. The significance of effects has been determined using the matrix presented in **Table 3**. The assessment has considered the magnitude of impacts and the importance of the resources/receptors that could be affected to classify the effect. After using the matrix to determine the effect, professional judgement will be used to determine the residual significance.

Table 1 Receptor Importance Descriptors

Importance level	Indicative attributes
Very High - Nationally significant attribute of High Importance	Water feature having a WFD classification shown in a RBMP. Watercourse with a Q95 $\geq 1.0\text{m}^3/\text{s}$. Site protected/ designated under International or UK legislation (SAC, SPA, SSSI, Ramsar site, Drinking Water Protection Zone (DrWPZ), or designating bathing/shellfish water. Major salmonid/ cyprinid fishery of national /international importance. Species protected at an international level.
High - Locally significant	Water feature having a WFD classification shown in a RBMP. Watercourse with a Q95 $< 1.0\text{m}^3/\text{s}$.

attribute of High Importance	Major Cyprinid Fishery at a local level. Species protected under UK legislation.
Medium – Feature of moderate quality and rarity	Water feature not having a WFD classification shown in a RBMP and watercourse with Q95 <1.0m ³ /s to >0.001m ³ /s.
Low – Feature of lower quality	Water feature not having a WFD classification shown in a RBMP and Q95 ≤0.001m ³ /s.

1.5.5. The magnitude of adverse or beneficial impacts has been determined by the eight-point scale presented in **Table 2** taking DMRB LA 113 Road Drainage and the Water Environment¹⁸ and DMRB LA104 Environmental Assessment Table¹⁹ into account. DMRB LA104 Environmental Assessment and monitoring¹⁹ has been used for the significance criteria.

Table 2 Magnitude of Impact

Magnitude	Criteria
Major Adverse	Results in a loss of attribute and/ or quality and integrity of the attribute.
Moderate Adverse	Results in impact on integrity of attribute, or loss of part of attribute.
Minor Adverse	Results in some measurable change in attribute's quality or vulnerability.
Negligible	Results in impact on attribute, but of insufficient magnitude to affect the use or integrity.
Minor Beneficial	Results in some beneficial impact on attribute or a reduced risk of adverse impact occurring.
Moderate Beneficial	Results in moderate improvement of attribute quality.
Major Beneficial	Results in major improvement of attribute quality.
No Change	No change to the quality of the attribute

1.5.6. All impacts are also described as either long-term/short-term, temporary/permanent, direct/indirect and certain/uncertain. These descriptors are defined below.

- Long-term/Medium-term/Short-term: describes length of time an impact is likely to last for. For this assessment, water quality impacts that are short-term tend to occur over hours, days and maybe weeks. Beyond that impacts that occur over several years are considered medium term. Long-term are impacts that occur for longer such as 10 years or more.
- Temporary/permanent: describes whether an impact lasts or remains indefinitely.

- Direct/indirect: describes whether a receptor is impacted directly, or indirectly via another pathway or mechanism because of the Proposed Varied Development.

1.5.7. Certain/Uncertain: describes the certainty of the impact predicted.

1.6. Significance of Effect

1.6.1. The significance of effects has been determined using the matrix presented in **Table 3** which is based broadly on criteria first presented in DMRB LA104 Environmental assessment and monitoring¹⁹.

1.6.2. The assessment has considered the magnitude of impacts and the importance of the resources/receptors that could be affected to classify the effect. Effects classed as moderate or greater are considered 'Significant' in planning terms (i.e. the shaded cells in **Table 3**).

Table 3 Matrix for Assessment of Significance

Magnitude	Very High	High	Medium	Low
Major	Very large	Very large or large	Large or moderate	Moderate or slight
Moderate	Very large or large	Large or moderate	Moderate	Slight
Minor	Large or moderate	Moderate or slight	Slight	Slight or neutral
Negligible	Slight	Slight	Slight or neutral	Neutral
No change	Neutral	Neutral	Neutral	Neutral

1.7. Private Water Supply Assessment

1.7.1. A PWS survey and assessment was carried out and can be viewed in **Technical Appendix 9.1**. This assessment has two phases:

- Phase 1 Information Gathering: PWS locations and information were gathered from an information request to Argyll & Bute Council (received 05 January 2026).
- Phase 2 Risk Assessment: A risk assessment was carried out by using a source-pathway-receptor approach. The 'Guidance on Assessing the Impacts of Development on Groundwater Abstractions'⁴ was used to inform the approach to the risk assessment. However, the guidance is limited to only groundwater abstractions.

Therefore, for surface water abstractions a general source-pathway-receptor approach is used.

1.7.2. The guidance from SEPA suggests a matrix approach to determine the level of impact and then effect. However, although the guidance provides a framework for how effect can be determined, it does not state any criteria for the levels of impact. The overall method to determine the significance of effect outlined in the guidance document is similar to the approach to determine the significance of effect outlined above. Though where the SEPA methodology classifies the magnitude of impact into the categories Substantial, Moderate, Slight and Negligible, the methodology employed here uses the categories of Major, Moderate, Minor and Low with the resulting Significance categories of Very Large, Large, Moderate, Slight and Neutral. This allows greater distinction and clarity between these magnitudes and significances and provides a more precautionary and considered outcome. The magnitude of impact (classed as negligible, minor, moderate or major adverse/beneficial) is determined based on the criteria listed in **Table 1** and the assessor's professional judgement in relation to the risk involved.

1.7.3. The PWS assessment presented in **Technical Appendix 9.1** also outlines recommendations for mitigation, monitoring and a Private Water Supply Response Plan. The locations of identified PWS in relation to works on the Proposed Varied Development are shown in **Figure 9.2** and **Figure 9.3**.

1.8. Limitations and Assumptions

1.8.1. The EIA process enables informed decision-making based on the best possible information about the environmental implications of a development being made available. However, it is common for there to be some uncertainty as to the exact scale and nature of the environmental impacts predicted. Where there is uncertainty of design, reasonable worst-case assumptions have been made. Where this applies to the magnitude of impact and overall effect, additional mitigation may be proposed to ensure confidence in a non-significant outcome.

1.8.2. The assessment is based on data available from online sources. For many water features in the Study Area there was no long-term water quality or hydrological data, and for others the data that was available was limited or obtained some time ago (and thus may not be wholly representative of current conditions). Therefore, the potential effects from the Proposed Varied Development on water quality has been assessed qualitatively and based on background information and certain assumptions defined in the impact assessment section.

1.8.3. Where culverts and single span bridges are proposed for any haul road watercourse crossings, it has been assumed that there will be no loss of capacity compared to the existing channels.

1.9. References

- 1 Scottish Waters (2018) Sewers for Scotland - A technical specification for the design and construction of sewerage infrastructure (online). Available at: [Sewers for Adoption 7th Edition](#)
- 2 SEPA (2009) SEPA Interim Position Statement on Planning, Energy and Climate Change (online). Available at: <https://www.sepa.org.uk/media/59269/a-interim-position-statement-on-planning-energy-and-climate-change.pdf>
- 3 SEPA (2010). Engineering in the water environment: good practice guide River crossings (online). Available at: <https://www.confor.org.uk/media/246360/good-practice-guide-river-crossings.pdf>
- 4 SEPA (2024) Guidance on Assessing the Impacts of Development on Groundwater Abstraction (online). Available at: <https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fmfzpnjwb%2Fguidance-on-assessing-the-impacts-of-developments-on-groundwater-abstractions.docx&wdOrigin=BROWSELINK>
- 5 Ordnance Survey (2024) Ordnance Survey Maps (online). Available at: <https://www.ordnancesurvey.co.uk/>
- 6 Meteorological Office website (2024) (Online). Available at: <https://www.metoffice.gov.uk/public/weather/climate/gfhyzss9j>
- 7 SEPA website (2024) (online). Available at: <https://www.sepa.org.uk/>
- 8 Scottish Natural Heritage (2024) Standing Waters Database (online). Available at: http://gateway.snh.gov.uk/pls/apex_cagdb2/f?p=111:1000
- 9 Scottish Government (2024) Scotland's Aquaculture website (online). Available at: <http://aquaculture.scotland.gov.uk/>
- 10 Scottish Government (2024) Scotland's Environment website (online). Available at: <https://www.environment.gov.scot/maps/scotlands-environment-map/>
- 11 UK Centre for Ecology and Hydrology (2024) National River Flow Archive website (online). Available at: <https://nrfa.ceh.ac.uk/data/station/info/6001>
- 12 British Geological Survey (BGS) (2024) Online Mapping (online). Available at: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>
- 13 NatureScot (2024) (online). Available at: <https://www.nature.scot/>
- 14 British Geological Survey (2024) Scotland's Aquifers and Groundwater Bodies (online) Available at: <https://www2.bgs.ac.uk/groundwater/waterResources/ScotlandsAquifers.html>
- 15 National River Flow Archive (2024) Rainfall Statistics (online) Available at: <https://nrfa.ceh.ac.uk/rainfall-statistics>
- 16 Scottish Government (2024) Scotland's Environment Map (online) Available at: <https://www.environment.gov.scot/maps/scotlands-environment-map/>
- 17 SEPA National Flood Risk Assessment Maps (2018) Available at: <https://informatics.sepa.org.uk/NFRA2018/>

18 Standards for Highways (2020) LA 113 - Road drainage and the water environment.

Available at: <https://www.standardsforhighways.co.uk/tses/attachments/d6388f5f-2694-4986-ac46-b17b62c21727?inline=true>

19 Standards for Highways (2020) LA 104 - Environmental assessment and monitoring.

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