

09.

Water Environment

9. Water Environment

9.1 Introduction

- 9.1.1 This chapter of the EIA Report identifies and assesses the potential impacts and effects of the Project on the hydrology, hydrogeology, and flood risk during construction and operation.
- 9.1.2 For this assessment, the water environment includes the water quality of surface water features, fluvial hydromorphology of watercourses and the quality, flows, and levels of groundwater features. Where there are groundwater dependent terrestrial ecosystems (GWDTE), these are also considered in this assessment when determining the importance of water features. The sensitive hydrological and hydrogeological receptors and any key environmental designations in the areas surrounding the Project are also considered.
- 9.1.3 There is interaction between environmental topics and therefore this chapter should be read in conjunction with Chapter 8 Biodiversity for the assessment of any GWDTE and Chapter 10 Ground Conditions for the assessment of geology, bedrock, peat and carbon.
- 9.1.4 Potential impacts and effects on water environment receptors have been described for the construction and operation phases of the Project. Further, the approach to mitigating potential impacts during all phases have been described with reference to good practice guidance and design, which is described later.
- 9.1.5 This chapter is also supported by the following figures (which are provided in Volume 2) and technical appendices (which are provided in Volume 3):
- Figure 9.1 Surface Water Receptors;
 - Figure 9.2 Groundwater Receptors;
 - Figure 9.3 Groundwater Water Framework Directive Bodies;
 - Figure 9.4 Watercourse Crossings;
 - Figure 9.5 Surface Water Flood Risk;
 - Figure 9.6 Pluvial Flood Risk;
 - Appendix 9.1 Surface Water Feature Register;
 - Appendix 9.2 Watercourse Crossings;
 - Appendix 9.3 Water Framework Directive Groundwater and Surface Water Bodies;
 - Appendix 9.4 Flood Risk Assessments;
 - Appendix 9.5 EASR Authorisations ; and
 - Appendix 9.6 Groundwater Dependent Terrestrial Ecosystems Assessment.

9.2 Legislation and Policy

Legislation

- 9.2.1 Legislation, planning policy and guidance relevant to this assessment and pertinent to the Project is outlined in this section (please note that regulations transferring powers from the European Union to the United Kingdom authorities are not listed).
- 9.2.2 From 01 November 2025, the Environmental Authorisations (Scotland) Regulations 2018¹ has replaced the following legislation relevant to the Water Environment:
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) ('the CAR Regulations')^{2,3}; and
 - Pollution Prevention and Control (Scotland) Regulations 2012 (PPC)⁴.
- 9.2.3 Other national legislation relevant to the Project and will be considered as part of this assessment include:
- Water Environment Water Services ('the WEWS Act') (Scotland) Act 2003⁵;
 - Environmental Liability (Scotland) Regulations 2009⁶;
 - The Environmental Protection (Duty of Care) (Scotland) Regulations (2014)⁷;
 - The Construction (Design and Management) Regulations (2015)⁸;
 - Nature Conservation (Scotland) Act (2004)⁹;
 - The Private Water Supplies (Scotland) Regulations 2006¹⁰;
 - The Climate Change (Scotland) Act (2009)¹¹;
 - The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations (2017)¹²;

¹ Scottish Government (2018) The Environmental Authorisations (Scotland) Regulations 2018. [online] Available at: <https://www.legislation.gov.uk/sdsi/2018/9780111039014/contents> [Accessed 24 Nov. 2025].

² Scottish Parliament, 2011. The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (CAR) ('the CAR Regulations'). Available online: <https://www.legislation.gov.uk/ssi/2011/209/contents/made> [Accessed 24 Nov. 2025].

³ While EU directives ceased to have direct effect following Brexit, national legislation including the 2013 Order had incorporated and given effect to the WFD so that its provisions were effectively assimilated. As the term WFD remains used by SEPA and other agencies it is used in this report.

⁴ Scottish Parliament (2012a). Pollution Prevention and Control (Scotland) Regulations 2012 (PPC). (online) Available at: <https://www.legislation.gov.uk/ssi/2012/360/contents> [Accessed 24 Nov. 2025].

⁵ Scottish Parliament (2003). Water Environment Water Services ('the WEWS Act') (Scotland) Act 2003. (online) Available at: <https://www.legislation.gov.uk/asp/2003/3/contents> [Accessed 24 Nov. 2025].

⁶ Scottish Parliament (2009). Environmental Liability (Scotland) Regulations 2009. (online) Available at: <https://www.legislation.gov.uk/ssi/2009/266/contents/made> [Accessed 24 Nov. 2025].

⁷ Scottish Parliament (2014). The Environmental Protection (Duty of Care) (Scotland) Regulations. (online) Available at: <https://www.legislation.gov.uk/ssi/2014/4/contents/made> [Accessed 24 Nov. 2025].

⁸ Scottish Parliament (2015). The Construction (Design and Management) Regulation 2015. (online) Available at: <https://www.legislation.gov.uk/ukxi/2015/51/contents/made> [Accessed 24 Nov. 2025].

⁹ Scottish Parliament (2004). Nature Conservation (Scotland) Act 2004. (online) Available at: <https://www.legislation.gov.uk/asp/2004/6/contents> [Accessed 24 Nov. 2025].

¹⁰ The Private Water Supplies (Scotland) Regulations (2006). Available at: [The Private Water Supplies \(Scotland\) Regulations 2006](#)

¹¹ The Climate Change (Scotland) Act (2009). Available at: [Climate Change \(Scotland\) Act 2009](#)

¹² The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations (2017).

- The Control of Substances Hazardous to Health Regulations (2002)¹³;
- The Water Framework Directive (European Parliament and Council of the European Union, 2000), as transposed in Scotland through the Water Environment and Water Services (Scotland) Act 2003 and associated regulations¹⁴; Town & Country Planning (Scotland) Act (1997)¹⁵; and
- Environmental Protection Act (1990) and Part 2A The Contaminated Land Regime (2006)¹⁶.

National Policy

National Planning Framework 4

- 9.2.4 The National Planning Framework 4 (NPF4), published in February 2023¹⁷, replaces the previous National Planning Framework 3 (NPF3)¹⁸. NPF4 sets out the Scottish Government's spatial development principles, regional priorities, national developments and national planning policy, covering six spatial principles which aim to deliver sustainable places, liveable places and productive places.
- 9.2.5 Policy 11 within NPF4 states that project design and mitigation should address any effects on hydrology, the water environment and flood risk.
- 9.2.6 Policy 22 Flood risk and water management within the NPF4 states that development in areas of flood risk may be supported if certain conditions are met, including for essential infrastructure where the location is required for operational reasons. In such as case, it should be demonstrated that all flood mechanisms are understood and addressed, there is no reduction in flood plain capacity, and the development remains safe and operational during floods.

Planning Advice Notes and Specific Advice Sheets

- 9.2.7 Planning Advice Notes (PANs) and Specific Advice Sheets set out detailed advice from the Scottish Government in relation to a number of planning issues. PANs and Specific Advice Sheets relevant to the Project are outlined in Table 9-1.

Table 9-1 Planning Advice Notes and Specific Advice Sheets

Planning Advice Notes and Specific Advice Sheets	Key Requirements relating to the Water Environment and Soils
--	--

¹³ The Control of Substances Hazardous to Health Regulations (2002). Available at [The Control of Substances Hazardous to Health Regulations 2002](#) [Accessed 24 Nov. 2025].

¹⁴ European Parliament and Council of the European Union (2000) *Directive 2000/60/EC establishing a framework for Community action in the field of water policy* (Water Framework Directive). Official Journal of the European Communities, L327, pp. 1–73.

¹⁵ Scottish Parliament (1997). Town and County Planning (Scotland) Act 1997. (online) Available at: <https://www.gov.scot/binaries/content/documents/govscot/publications/correspondence/2019/05/planning-bill-stage-3-keeling-material/documents/planning-scotland-act-2019-keeling-material/planning-scotland-act-2019-keeling-material/govscot%3Adocument/Planning%2B%2528Scotland%2529%2BAct%2B2019%2B-%2Bkeeling%2Bmaterial.pdf> [Accessed 24 Nov. 2025].

¹⁶ Scottish Parliament (1990). Environmental Protection Act (1990) (as amended) and Part 2A The Contaminated Land Regime (online) Available at: <https://www.gov.scot/publications/environmental-protection-act-1990-part-2a-contaminated-land-statutory-guidance/pages/17/> [Accessed 24 Nov. 2025].

¹⁷ The Scottish Government. (2023) National Planning Framework 4. (online) Available at: <https://www.gov.scot/publications/national-planning-framework-4/> [Accessed: 16 May 2025]

¹⁸ The Scottish Government. (2014). National Planning Framework 3. (online) Available at: <https://www.gov.scot/publications/national-planning-framework-3/> [Accessed: 16 May 2025]

Planning and Waste Management Advice ¹⁹	States that there should be environmental protection considerations to mitigate any potential effects on the water environment.
Flood Risk: Planning Advice ^{20,21}	States that planning authorities should have regard to the probability of flooding from all sources. It encourages avoidance of flood risk by not locating development in areas at risk of flooding. The Scottish Planning Policy states that where built development is permitted in medium to high flood risk areas, measures to protect against or manage flood risk will be required.

River Basin Management Plan

9.2.8 The River Basin Management Plan (RBMP) for Scotland 2021-2027²² sets out a range of actions to address impacts to the water environment. The RBMP outlines actions for public bodies and land managers and is produced by the SEPA on behalf of the Scottish Government. In summary, the RBMP provides information on the following:

- The condition of the water environment;
- Pressures which could or are impacting the water environment; and
- Measures to address any impacts.

Local Policy

Falkirk Council

9.2.9 The Falkirk Local Development Plan (LDP) 2²³ was formally adopted on 07 September 2020. The LDP2 is the statutory planning document guiding development across Falkirk between 2020 to 2040. Currently, the council are in the process of developing Falkirk LDP3 and are aiming for it to be adopted post 2027. The policies set out in this document affects the northern part of the Study Area, effecting ZG Route and the New-build Overhead Line (WB Route) to the north of Cumbernauld. The policies relevant to the Project are displayed in Table 9-2.

¹⁹ The Scottish Government (2015). Planning and Waste Management Advice. (online) Available at: <https://www.gov.scot/publications/planning-and-waste-management-advice/> [Accessed: 16 May 2025]

²⁰ Scottish Government. (2015). *Flood risk: planning advice*. [Online]. Available at: <https://www.gov.scot/publications/flood-risk-planning-advice/> [Accessed 27 Oct. 2025].

²¹ PAN is now withdrawn. There is no replacement at time of EIA Report submission. The PAN notice was applicable at the time of EIA Report production'

²² SEPA (2021). River Basin Management Plan for Scotland 2021-2027. (online) Available at: <https://www.sepa.org.uk/media/594088/211222-final-rbmp3-scotland.pdf> [Accessed: 21 July 2024]

²³ Falkirk Local Development Plan 2 (2020), Falkirk Council (Online). Available at: <https://www.falkirk.gov.uk/development-planning/falkirk-local-development-plan-2> [Accessed 24 Nov. 2025].

Table 9-2 Policies from Falkirk LDP2

Policy Number	Description
PE22	<i>“There will be a general presumption against any development which would have a detrimental effect on the integrity and water quality of aquatic and riparian ecosystems, or the recreational amenity of the water environment, or which would lead to deterioration of the ecological status of any element of the water environment. Development proposals adjacent to a waterbody should provide for an appropriate undeveloped and suitably landscaped riparian corridor to avoid such impacts.</i> <i>There will be a general presumption against any unnecessary engineering works in the water environment including new culverts, bridges, watercourse diversions, bank modifications or dams.”</i>
PE24	<i>“Development proposals will be assessed against the Flood Risk Framework set out in Scottish Planning Policy, with development being avoided in locations at medium to high flood risk, unless it accords with the criteria set out in the Framework. There will be a presumption against new development which would:</i> <i>Be likely to be at risk of flooding;</i> <i>Increase the level of risk of flooding for existing development;</i> <i>Result in a use more vulnerable to flooding or with a larger footprint than any previous development on site; or</i> <i>Lead to an increase in the probability of flooding elsewhere.”</i>

North Lanarkshire Council

- 9.2.10 The North Lanarkshire LDP²⁴ was formally adopted on 06 July 2022 and serves as a 5-10-year Framework for development. The North Lanarkshire LDP policies apply to most of the development, including XX, XR and part of WB Routes. The policies relevant to the Project are displayed in Table 9-3Table 9-3.

Table 9-3 Policies from North Lanarkshire LDP

Policy Number	Description
PROT A Policy	A1) <i>“International (Designated by NatureScot) Special Areas of Conservation / Special Protection Areas Development proposals likely to have a significant effect on a European site will be subject to an Appropriate Assessment. Where an Appropriate Assessment is unable to conclude that a development will not adversely affect the integrity of the site, development will only be permitted where there are no alternative solutions; there are imperative reasons of overriding public interest; and if compensatory measures are provided to ensure the overall coherence of the European site network is protected. Refer to Supplementary Planning Guidance 20 Biodiversity and Development for further information”</i> A2) <i>“National Sites of Special Scientific Interest (Designated by NatureScot) Ancient Woodland Development that affects a Site of Special Scientific Interest will only be permitted where an appraisal has demonstrated: the</i>

²⁴ North Lanarkshire Council. (2021). *North Lanarkshire Local Development Plan*. [Online]. Available at: <https://www.northlanarkshire.gov.uk/planning-and-building/development-plans/current-north-lanarkshire-local-development-plan> [Accessed 27 October 2025].

	<i>objectives of the designated area and the overall integrity of the area would not be compromised; or any significant adverse effects on the qualities for which the area has been designated are clearly outweighed by social or economic benefits of national importance. Applicants should adhere to the Scottish Government's Control of Woodland Removal Policy with regards to any development proposal on land parcels containing woodland either in full or in part."</i> A3) <i>"Local Sites Special Landscape Areas / Sites of Importance for Nature Conservation / Local Nature Reserves / Country Parks / Formal Town Parks / Community Parks / Tree Preservation Orders* / Core Paths* and Rights of Way* Planning permission will only be granted for proposals potentially affecting Local Sites if it can be demonstrated to the Council's satisfaction that there will be no adverse impact or that any impacts can be mitigated in environmental terms relevant to the impact."</i> A4) <i>"Urban Green Network Natural areas (including urban wildlife corridors, trees & woodlands, watercourses & wetlands and flood plains), outdoor sports facilities* and other green open spaces contributing to quality of life in local communities. The Council will maintain community wellbeing in residential areas by protecting the Urban Green Network. Planning permission will only be granted for proposals potentially affecting the Urban Green Network if it can be demonstrated to the Council's satisfaction that there will be no adverse impact or that any impacts can be mitigated in environmental terms."</i>
EDQ 3	<i>"Ensuring that water body status is protected and, where possible, enhanced. Status includes physical characteristics, so proposals such as culverting will only be considered where no other practical option exists. Foul water should connect to the public sewer - alternatives to this will only be permitted where no public system exists and the alternative does not pose an environmental risk. Sustainable Urban Drainage Systems should be adopted within site design and appropriate details, including during the construction phase, require to be submitted with any relevant planning application. Buffer strips may be required in respect of the water environment between a development and each watercourse."</i>

9.3 Methodology

Consultation

- 9.3.1 Table 9-4 lists consultation that has taken place in preparing this assessment. The table lists results from the scoping opinion unless otherwise stated.

Table 9-4 Consultation

Consultee	Summary of Response	Action taken in this EIA Report
SEPA (Scoping Opinion)	"The footprint of all proposed temporary and permanent infrastructure (including all the ancillary construction work areas, for example excavations, land raising and other groundworks, storage, laydown and working areas) overlain with all waterbodies."	Volume 2, Figures 9.1 and 9.4 display all the surface water bodies and nearby associated works.

	“The minimum buffer around each waterbody, as detailed in Table 1 of Recommended Riparian Corridor Layer for use in Land Use Planning, from all construction activities including working and storage areas, or 50m where subsurface activities are more than 1m in depth. If these minimum buffers cannot be achieved each component within them must be numbered on a plan with an associated photograph of the location, dimensions of the waterbody, drawings of what is proposed in terms of any engineering works, and details of why the minimum buffer cannot be achieved and mitigation measures to protect the feature.”	These buffer zones have been included in Volume 2, Figures 9.1 and 9.4. Within the ‘Assessment of Effects’ for each aspect of the Project works to take place within the recommended buffer zones have been assessed. Volume 3, Appendix 9.2 lists all the watercourse crossings. Volume 3, Appendix 9.1 also lists the works next to each surface water feature.
	Policy 11 of NPF4 requires that the project design and mitigation demonstrate how impacts on hydrology, the water environment and flood risk are addressed. The proposals should demonstrate how impacts on local hydrology have been minimised and the site layout designed to minimise watercourse crossings and avoid other direct impacts on water features. Measures should be put in place to protect any downstream sensitive receptors.	Sections 9.5 Embedded Mitigation and Section 9.6 Standard Mitigation detail measures taken to protect downstream receptors and minimise impacts on the hydrology of the area.
	<i>“A map showing the location, size, depths and dimensions of all borrow pits overlain with all waterbodies within 250m and showing a site-specific buffer around each waterbody proportionate to the depth of excavations. The information provided needs to demonstrate that a site-specific proportionate buffer can be achieved.”</i>	Volume 2, Figure 9.1 displays the locations of surface water features, their associated buffer zones and nearby excavations.
	“Construction and operation of development can disrupt	The assessment of GWDTEs can be found within Chapter 8

	groundwater flow and impact Groundwater Dependent terrestrial Ecosystems (GWDTE)... The layout of the design of the development must avoid adverse impacts on such areas, ensuring the water environment, including GWDTEs and existing groundwater abstractions, are protected.”	and Volume 3, Appendix 9.6 which identifies all the key GWDTEs.
	“A set of drawings demonstrating all GWDTE are outwith a 10m radius of all activities, 100m radius of all excavations shallower than 1m and outwith 250m of all excavations deeper than 1m. The survey needs to extend beyond the site boundary where the distances require it.”	Volume 2, Figure 8.5 displays the locations of potential GWDTE and required buffers
	“If the minimum buffers cannot be achieved, a conceptual site model (CSM) should be provided that includes interpretation of the hydrogeological setting, including the groundwater flow regime, and the ecological features present. This may be supported, as appropriate, by intrusive ground investigation, groundwater monitoring, or groundwater modelling in addition to topography, properties of the emergent water and the soil, and underlying geology. Please refer to Guidance on Assessing the Impacts of Developments on Groundwater Dependent Terrestrial Ecosystems for further advice on undertaking detailed site specific qualitative and/or quantitative risk assessments and the minimum information we require to be submitted.”	Volume 3, Appendix 9.6 includes the conceptual models for each GWDTE where a works within the recommended buffer zones are to take place.
	A set of drawings demonstrating all groundwater abstractions are outwith a 10m radius of all activities, 100m radius of all excavations shallower than 1m and outwith	Groundwater abstractions have been assessed within the ‘Assessment of Effects’ for each aspect of the Project.

	250m of all excavations deeper than 1m. The survey needs to extend beyond the site boundary where the distances require it.	These can be found on Volume 2, Figure 9.2
	If the minimum buffers cannot be achieved a conceptual site model should be provided that includes interpretation of the hydrogeological setting, including the groundwater flow regime. This may be supported, as appropriate, by intrusive ground investigation, groundwater monitoring, or groundwater modelling. Please refer to Guidance on Assessing the Impacts of Developments on Groundwater Abstractions for further advice on undertaking detailed site specific qualitative and/or quantitative risk assessments and the minimum information we require to be submitted.	Groundwater abstractions have been assessed within the 'Assessment of Effects' for each aspect of the Project.
SEPA (Email on the 18 September 2025)	AECOM emailed SEPA to confirm whether a photograph of every watercourse and location of works within recommended buffers is required. They confirmed that this is not required, but they may request further information and / or photographs for some crossings.	Available photographs for each of the watercourse crossings is available in Volume 3, Appendix 9.2.
Scottish Water	Scottish Water noted that there were no drinking water catchments or water abstraction sources.	Noted – no further action required within this chapter.
Scottish Water	"For reasons of sustainability and to protect our customers from potential future sewer flooding, Scottish Water will not accept any surface water connections into our combined sewer system."	No additional welfare will be required as the substations are existing. There will be no surface water connections into the combined sewer system.
Scottish Ministers	The presence of private water supplies which may be impacted by the development should be investigated. If PWS are identified an assessment of the potential impacts, risks and	Private Water Supplies (PWS) information was received from North Lanarkshire Council on the 10 June 2025, and from Falkirk Council on the 08 July 2025. They confirmed that were

	any mitigation should be provided.	no PWS identified within 1km of the Project. PWS assessments have therefore been scoped out.
North Lanarkshire Council	The EIA Report should include site-specific flood risk assessments and the assessment of impacts on water quality, hydrology, and aquatic habitats. Compliance should be undertaken with SEPA guidance and NLC's Supplementary Planning Guidance on flooding and drainage.	Flood Impacts on water quality, hydrology, and aquatic habitats have been identified and assessed in Volume 3, Appendix 9.4. SEPA guidance and NLC's Supplementary Planning Guidance on flooding and drainage has been considered.

Scope of Assessment

- 9.3.2 In the Scoping Report (Volume 3, Appendix 2.2), it was proposed that the operational phase for the Cumbernauld Substation Extension would be scoped out of the Water Environment Assessment. Since the scoping stage, the design of the Cumbernauld Substation Extension has evolved and greater earthworks are required at the Cumbernauld Substation Extension than were initially anticipated. Therefore, it has been decided to scope in the operational phase for the Water Environment Assessment.
- 9.3.3 Whilst minimal impacts are expected during the operational phase of the Project, this has still been considered due to the operational life of the substations and overhead line routes and the likely need for maintenance during this time.
- 9.3.4 Flood Risk has been scoped into the assessments for the Denny North Substation Works, Bonnybridge Substation Extension, Cumbernauld Extension and Wishaw Substation Extension. As part of an initial assessment, a search was undertaken for receptors within 1km downstream of each Site which have a baseline flood risk in their vicinity and a reasonable pathway to be affected by the Project. Consideration of flood risk for cable watercourse crossings was scoped out of the assessment at this stage, as the flood risk is dependent on the specific methods adopted by the contractor. Consideration of the risk associated with these methods, and determination of the appropriate mitigation measures should be included in the Construction Environment Management Plan (CEMP) which is to be developed at the detailed design phase.
- 9.3.5 PWS have also been scoped out of the assessment. Data received from North Lanarkshire Council on the 10 June 2025, and from Falkirk Council on the 08 July 2025 confirmed that there were no PWS identified within 1km of the Project.
- 9.3.6 Hydromorphology effects have only been assessed as visible on a 1:50K OS Map. Water features not shown on this scale will likely be minor watercourses likely to sustain only negligible impacts.
- 9.3.7 A WFD assessment has been excluded from this study, as only minimal intrusive works are proposed within WFD-designated water bodies. Therefore, not deemed as a requirement.
- 9.3.8 Volume 3, Appendix 9.1 details which surface water bodies have been scoped in and out of the assessment. Table 9-5 identifies all groundwater bodies and surface water bodies

scoped in for assessment for each of the Project works, and these can be viewed in Volume 2, Figures 9.1 and 9.2.

Table 9-5 Scope of Assessment

The Project Works	Impact	Relevant Receptors	Development Phase
WB Route	Groundwater Quality	Scottish Coal Measures, Clackmannan Aquifer Group and Superficial Aquifers	Construction
	Groundwater Quantity	Scottish Coal Measures, Clackmannan Aquifer Group and Superficial Aquifers	Construction
	Surface Water Quality	Bonny Water / Red Burn, BW-1, BW-2, BW-3, BW-6, BW-9, BW-10, BW-11, BW-12, BW-13, BW-14, BW-16, BW-17, BW-20, BW-22, BW-24, River Carron, Forth and Clyde Canal, Luggie Water, Glencryan Burn, LW-1, LW-4, LW-6, LW-7, LW-8, LW-10, LW-13, LW-14, LW-15, LW-16 and LW-18	Construction
	Hydromorphology	BW-2, BW-3, BW-6, BW-9, BW-10, BW-11, BW-12, BW-13, BW-14, BW-17, BW-22, BW-24, LW-1, LW-4, LW-6, LW-7, LW-10, LW-13, LW-15, LW-16 and Forth and Clyde Canal	Construction
Upgraded Overhead Line	Groundwater Quality	Scottish Coal Measures, Clackmannan Aquifer Group and Superficial Aquifers	Construction
	Groundwater Quantity	Scottish Coal Measures, Clackmannan Aquifer Group and Superficial Aquifers	Construction
	Surface Water Quality	Auchter Water, AW-2, AW-7, AW-8, AW-9, AW-10, South Calder Water, SCW-1, SCW-2, SCW-3, SCW-4, SCW-5, SCW-6, SCW-7, Catchment 13-1, Catchment 13-2, Tillan Burn, TB-1, TB-2, TB-4, Shirrel Burn / Thankerton Burn / Legbrannock Burn, ShirrelB-5, ShirrelB-6, North Calder Water, NCW1-3, NCW1-4, NCW1-5, Catchment 9-2, Catchment 9-3, Shotts Burn, ShottsB-3, South Burn, SB-3, SB-5, SB-6, SB-7, SB-8, SB-9, SB-10, SB-12, SB-13, SB-15, SB-16, Catchment 19-1, Catchment 19-2, Catchment 19-7, Catchment 19-8, Catchment 19-9, Pow Burn / Tor Burn, PB-5, PB-6, River Carron, RC1-1, RC1-2, RC1-5, RC1-6, RC2-1, RC2-2, RC2-4, RC2-5, RC2-6, BW-3, River Clyde, Catchment 17-2	Construction
	Hydromorphology	Auchter Water, AW-8, AW-9, SCW-1, SCW-4, SCW-5, SCW-6, SCW-7, Catchment 13-1, Tillan Burn, TB-4, ShirrelB-5, ShirrelB-6, North Calder Water, NCW1-3, NCW1-4, NCW1-5, Catchment 9-3, ShottsB-3, SB-5, SB-8,	Construction

CB Route Removal		SB-10, SB-13, SB-15, Catchment 19-8, Catchment 19-9, PB-5, River Carron, RC1-6, RC2-1, RC2-2, Catchment 17-2, BW-3	
	Groundwater Quality	Scottish Coal Measures, Clackmannan Aquifer Group and Superficial Aquifers	Construction
	Groundwater Quantity	Scottish Coal Measures, Clackmannan Aquifer Group and Superficial Aquifers	Construction
	Surface Water Quality	Bonny Water / Red Burn, BW-1, BW-4, BW-6, BW-7, BW-8, BW-10, BW-11, BW-12, BW-13, BW-14, BW-17, BW-18, River Carron and Forth and Clyde Canal	Construction
AA Route Partial Undergrounding	Hydromorphology	BW-1, BW-7, BW-8, BW-10, BW-11, BW-13 and Forth and Clyde Canal	Construction
	Groundwater Quality	Scottish Coal Measures, Clackmannan Aquifer Group and Superficial Aquifers	Construction and Operation
	Groundwater Quantity	Scottish Coal Measures, Clackmannan Aquifer Group and Superficial Aquifers	Construction and Operation
	Surface Water Quality	Bonny Water / Red Burn, BW-1, BW-4, BW-6, River Carron, Forth and Clyde Canal	Construction
Denny North Substation Works	Hydromorphology	BW-1 and BW-6	Construction
	Groundwater Quality	Clackmannan Aquifer Group and Superficial Aquifers	Construction and Operation
	Surface Water Quality	Pow Burn / Tor Burn, PB-4, River Carron, RC1-1 and RC1-2	Construction and Operation

Bonnybridge Substation Extension	Hydromorphology	RC1-2	Construction and Operation
	Flood risk	RC 1-1, RC 1-2, RC 1-4, PB-1, PB-2, PB-4 catchments and floodplains Langlard's Farm, Doghillock Farm, minor local roads	Construction and Operation
	Groundwater Quality	Scottish Coal Measures and Superficial Deposits	Construction and Operation
	Groundwater Quantity	Scottish Coal Measures and Superficial Deposits	Construction and Operation
	Surface Water Quality	Bonny Water/Red Burn, BW-1, BW-3 and River Carron	Construction and Operation
	Hydromorphology	BW-3	Construction and Operation
	Flood risk	Bonny Water, BW-1 and BW-3 catchments and floodplains	Construction and Operation
Cumbernauld Substation Extension	Groundwater Quality	Clackmannan Group Aquifer and Superficial Aquifer	Construction and Operation
	Surface water quality	Bonny Water/Red Burn, Glencryan Burn, BW-16, BW-35	Construction and Operation
	Hydromorphology	Glencryan Burn, BW-16	Construction and Operation

Wishaw Substation Extension	Groundwater Quality	Scottish Coal Measures and Superficial Deposits	Construction and Operation
	Groundwater Quantity	Scottish Coal Measures and Superficial Deposits	Construction and Operation
	Surface Water Quality	Catchment 17-1 and Catchment 17-2	Construction and Operation
	Flood Risk	Catchment 17-1 and Catchment 17-2	Construction and Operation
Distribution Line Diversion Works	Groundwater Quality	Scottish Coal Measures, Clackmannan Aquifer Group and Superficial Aquifers	Construction
	Groundwater Quantity	Scottish Coal Measures, Clackmannan Aquifer Group and Superficial Aquifers	Construction
	Surface Water Quality	Bonny Water / Red Burn, Forth and Clyde Canal, RC2-4, RC2-7, BW-6, BW-9, BW-12, BW-14, BW-15, BW-24, BW-26, BW-27, LW-4, LW-15, Catchment 19-1, Catchment 19-2, Catchment 19-3, SB-3, SB-10, SB-12, ShottsB-3, TB-4, SCW-5, Auchter Water	Construction
	Hydromorphology	Forth and Clyde Canal, RC2-7, BW-9, BW-14, BW-27, LW-4, SB-12, Auchter Water	Construction

Study Area

- 9.3.9 For this impact assessment, a 1km Study Area has been used within which water features that may be affected by the Project have been identified. For these water features, the baseline also considers downstream attributes beyond the 1km Study Area as water quality impacts can sometimes propagate along watercourses, and it is important to consider any new or different receptors along its course that might materially influence the importance grade attributed to the watercourse. The distance downstream is variable and reflects the nature of the risk, rate of conveyance, dilution and dispersion potential at any given time. In this case, we have adopted a distance of 2km as a precautionary approach.

Methodology for Determining Baseline Conditions and Importance of Receptors

Baseline Data Collection

- 9.3.10 The following sources have been used to inform the baseline upon which the effects have been assessed:

- Online Ordnance Survey digital maps²⁵;
- Met Office website²⁶;
- SEPA Water Classification Hub²⁷;
- SEPA Flood Risk Maps V3.0²⁸;
- Scottish Natural Heritage (SNH) Standing Waters Database²⁹;
- Scotland's Aquaculture website³⁰;
- Scotland's Environment website³¹;
- National Soil Map of Scotland³²;
- National River Flow Archives website³³;
- British Geological Survey (BGS) website³⁴; and
- SEPA Reservoir Inundation Maps³⁵;
- SEPA Groundwater Flood Maps³⁶;

²⁵ Ordnance Survey. [Online]. Available: <https://www.ordnancesurvey.co.uk/> [Accessed 21 July. 2025].

²⁶ Meteorological Office website. [Online]. Available: <https://www.metoffice.gov.uk/> [Accessed 21 July. 2025].

²⁷ SEPA website. [Online]. Available: <https://www.sepa.org.uk/> [Accessed 21 July. 2025].

²⁸ SEPA dataset. [Online]. Available at <https://map.sepa.org.uk/floodmaps> [Accessed 21 July. 2025].

²⁹ SNH Standing Waters Database. [Online]. Available: <https://opendata.nature.scot/datasets/snh::standing-waters-database/explore?location=57.718717%2C-4.472775%2C6> [Accessed 21 July. 2025].

³⁰ Scotland's Aquaculture website. [Online]. Available: <http://aquaculture.scotland.gov.uk/> [Accessed 21 July. 2025].

³¹ Scotland's Environment website. [Online]. Available: <https://www.environment.gov.scot/maps/scotlands-environment-map/> [Accessed 21 July. 2025].

³² Scotland's soils website. [Online]. Available: http://map.environment.gov.scot/Soil_maps/?layer=1 [Accessed 21 July. 2025].

³³ National River Flow Archive website. [Online]. Available: <https://nrfa.ceh.ac.uk/> [Accessed 21 July. 2025].

³⁴ British Geological Survey (BGS) online mapping. [Online]. Available: https://geologyviewer.bgs.ac.uk/?_ga=2.241546055.413674957.1777386764-927191638.1777386764 [Accessed 21 July. 2025].

³⁵ SEPA Reservoirs Map (2022). Dataset. SEPA. <https://map.sepa.org.uk/reservoirsfloodmap/Map.htm> [Accessed 21 July. 2025].

³⁶ SEPA Groundwater Map (2025). Dataset. SEPA. <https://map.sepa.org.uk/floodmap/map.htm> [Accessed 21 July. 2025].

- A Freedom of Information request was sent to SEPA on 05 September 2025 who provided the following data in the Study Area:
 - Surface water and groundwater quality;
 - Surface water and groundwater discharges;
 - Pollution events;
 - Surface water monitoring stations; and
 - Ecology surveys.
- 9.3.11 A walkover survey of the Study Area was carried out from the 27 to the 29 of September 2025. It was generally dry and sunny throughout the walkover period. The survey was carried out by a team of surveyors consisting of a water scientist, a hydrogeologist and an environmental scientist. The purpose of the survey was to identify and characterise surface water receptors, to consider the flow pathways between water features and across the Study Area, and to make general observations about the character of the landscape and other relevant features that could influence the sensitivity and importance of water features and the prediction of potential effects from the Project.

Assessment Methodology

- 9.3.12 The qualitative assessment of likely significant effects during the construction and operational phases of the Project 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; and
 - A pathway by which the above two are linked (i.e. all three elements must be present before a potential impact linkage can be realised).
- 9.3.13 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 Site, including the size and nature of the Project, potential construction methodologies and timescales etc.
- 9.3.14 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 desk study and site surveys.
- 9.3.15 The last stage of the approach is to determine if there is a viable exposure pathway or mechanism linking the source to the receptor. This is determined in the context of local conditions relative to water receptors within the Site 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).

Determining Magnitude of Impact and Importance of Receptors

- 9.3.16 The assessment of effect significance outlined within the below sections is consistent with the terminology and criteria outlined within Chapter 4 Project Description of this EIA Report.
- 9.3.17 The importance of receptors has been established on the basis of a four-point scale, using the criteria presented in Table 9-6 from the Design Manual for Roads and Bridges (DMRB) LA 113 Road Drainage and the Water Environment³⁷. It has also been modified to include hydromorphology.

The magnitude of adverse or beneficial impacts has been determined by the seven-point scale presented in

Table 9-7

- 9.3.18 Table 9-7 taking both DMRB LA 113 Road Drainage and the Water Environment³⁷ into account.
- 9.3.19 The significance of effects was determined using the matrix presented in Table 9-8. The assessment considered the magnitude of impacts and the importance of the resources / receptors that could be affected in order to classify the effect. After using the matrix to determine the effect, professional judgement was used to determine the residual significance.

Table 9-6 Receptor importance descriptors (reproduced and adapted from Chapter 4)

Importance	Groundwater	Surface Water	Hydromorphology	Flood Risk
Very High - Nationally significant attribute of High Importance	Aquifer providing a regionally important resource and / or supporting a site protected under International and UK legislation Ecology and Nature Conservation. Groundwater locally supports GWDTE.	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 (Special Area of Conservation (SAC), Special Protection Area (SPA), Site of Special Scientific Interest (SSSI), Ramsar site, Drinking Water Protection Zone (DrWPZ), or designating bathing / shellfish water.	Unmodified, near to or pristine conditions, with well-developed and diverse geomorphic forms and processes characteristic of river and loch type.	Essential Infrastructure or Most vulnerable development.

³⁷ National Highways (2020) Design Manual for Roads and Bridges (DMRB) (online). Available at: <https://www.standardsforhighways.co.uk/dmrbs> [Accessed 21 July. 2025].

		Major salmonid / cyprinid fishery of national / international importance. Species protected at an international level.		
High - Locally significant attribute of High Importance	Aquifer providing locally important resource or supporting river ecosystem and / or supporting sensitive habitats of national importance. Groundwater supports a GWDTE.	Water feature having a WFD classification shown in a RBMP. Watercourse with a $Q_{95}m^3/s < 1.0m^3/s$. Major Cyprinid Fishery at a local level. Species protected under UK legislation.	Conforms closely to natural, unaltered state and will often exhibit well-developed and diverse geomorphic forms and processes characteristic of river and loch type. Deviates from natural conditions due to direct and / or indirect channel, floodplain, bank modifications and / or catchment development pressures. Typology may be sensitive to morphological change (e.g. Plane-riffle, wandering and braided). Diverse range of fluvial processes that would be highly vulnerable to change as a result of modification.	Highly vulnerable development.
Medium – Feature of moderate quality and rarity	Aquifer providing water for agricultural or industrial use with limited connection to surface water. Groundwater of limited value because its quality does not allow potable or other quality sensitive uses.	Water feature not having a WFD classification shown in a RBMP and watercourse with $Q_{95} < 1.0m^3/s$ to $> 0.001 m^3/s$.	Shows signs of previous alteration and / or minor flow / water level regulation but still retains some natural features or may be recovering towards conditions indicative of the higher category.	Least vulnerable development.

Low – Feature of lower quality	Unproductive Strata	Water feature not having a WFD classification shown in a RBMP and Q95 $\leq 0.001\text{m}^3/\text{s}$.	Substantially modified by past land use, previous engineering works or flow / water level regulation. Watercourses likely to possess an artificial cross-section (e.g. trapezoidal) and will probably be deficient in bedforms and bankside vegetation; also realigned or channelised with hard bank protection, or culverted and enclosed.	Water compatible development.
---------------------------------------	---------------------	---	---	-------------------------------

Table 9-7 Magnitude of Impact

Impact		Criteria
Major Adverse		Loss of resource and / or quality and integrity of resource; severe damage to key characteristics, features or elements.
Moderate Adverse		Loss of resource but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
Minor Adverse		Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
Negligible Adverse		Very minor loss or detrimental alteration to one or more characteristics, features or elements.
Negligible Beneficial		Very minor benefit to or positive addition of one or more characteristics, features or elements.
Minor Beneficial		Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.
Moderate Beneficial		Benefit to, or addition of, key characteristics, features or

	elements; improvement of attribute quality.
Major Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
No Change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

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

- Long-term / Short-term: describes length of time an impact is likely to last. For this assessment, water quality impacts that are short-term tend to occur over hours, days or maybe weeks. Beyond that impacts are more likely to be described as longer term. Note that this is different to some other topics which refer to periods of years for both categories;
- Temporary / Permanent: describes whether an impact will persist indefinitely;
- Direct / Indirect: describes whether a receptor is impacted by an impact directly or indirectly via another pathway or mechanism as a consequence of the Project; and
- Certain / Uncertain: describes the certainty of the impact predicted.

Significance of Effect

9.3.21 The significance of effects has been determined using the matrix presented in Table 9-8. The assessment has considered the magnitude of impacts and the importance of the resources / receptors that could be affected to classify the effect. Where the matrix allows a range of effect, professional judgement has been used to determine the residual significance. The significance of effects has been determined using the matrix presented in Table 9-8. Effects classed as moderate or greater are considered 'Significant' in planning terms (i.e. the shaded in Table 9-8).

Table 9-8 Matrix for assessment of significance

Importance	Magnitude				
	Major	Moderate	Minor	Negligible	No change
Very High	Very Large	Large / Very Large	Moderate / Large	Slight	Neutral
High	Large / Very Large	Moderate / Large	Slight / Moderate	Slight	Neutral
Medium	Moderate / Large	Moderate	Slight	Neutral / Slight	Neutral

Low	Slight / Moderate	Slight	Neutral / Slight	Neutral / Slight	Neutral
-----	-------------------	--------	------------------	------------------	---------

Assumptions and Limitations

- 9.3.22 The environmental impact assessment 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 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. For instance, where existing towers are integrated into the design, then foundations work may not be required but are assumed to take place for the purpose of this report. Where this applies to the magnitude of impact and overall effect, additional mitigation may be proposed to ensure confidence in a non-significant outcome.
- 9.3.23 The assessment is based on data available from online sources and a site walkover. For many water features in the Study Area there was no long-term water quality or hydrological data, and for others the data available was limited or obtained some time ago (and thus may not be representative of current conditions). Therefore, the potential effects from the Project on water quality, hydrology and hydrogeology has been assessed qualitatively and based on background information and certain assumptions defined in the impact assessment section. Given the nature of the Project this is considered acceptable.
- 9.3.24 With regards to the walkover survey, as this was carried out in September 2025, there was dense vegetation growth on the banks which obscured the channel in many places. Therefore, it was not possible to fully assess the condition of these channels due to lack of visibility. In addition, seasonally dry and ephemeral watercourses may not have been identified in the field. However, by their very nature their importance is low, so significant effects are unlikely.
- 9.3.25 Any borehole data from BGS³⁴ sources are included on the basis that “*the British Geological Survey accept no responsibility for omissions or misinterpretation of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation*”.
- 9.3.26 Where culverts and single span bridges are proposed for any temporary trackways watercourse crossings, it has been assumed that there will be no loss of capacity compared to the existing channels.
- 9.3.27 This chapter should be read in the context of the legislation, statutory requirements and / or industry good practice applicable at the time of the assessment being undertaken. Any subsequent changes in this legislation, guidance or design may necessitate findings to be reassessed. Further details and specific design information, including dimensions of infrastructure units and works, are given in Chapter 4 Project Description.

9.4 Baseline and Future Baseline

Topography, Land Use and Climate

- 9.4.1 The Study Area consists mainly of lowland terrain and river valleys, with elevations dropping to around 30m Above Ordnance Datum (mAOD) near the Bonnybridge

Substation Extension. In contrast, the northern boundary near Proposed Denny North Substation Works and the eastern boundary feature undulating hills. These eastern hills support moorland vegetation, with the highest points reaching approximately 230mAOD.

- 9.4.2 The Study Area is mostly rural with some large urban areas, including Falkirk, Cumbernauld, Airdrie and Wishaw. The landscape is characterised by pastoral farmland, with open fields used for livestock grazing and bordered by hedgerows and small woodland patches. Across the wider area, historical and active mineral extraction is evident, with a notable concentration of mines and quarries located to the south of Cumbernauld.
- 9.4.3 Legacy mines and quarries are common across the Study Area, though the concentrations are higher to the south of Cumbernauld, in the Study Area around the XX Route. The vast majority of these have ceased operation, but there are two active sites that fall into the Study Area around the ZG Route.
- 9.4.4 Rainfall monitoring within the Study Area is undertaken by the SEPA, which operates a gauge at Dunnswood Sewage Treatment Works (STW) (at NS 78118 77194) around Castlecary approximately 2.7km from WB Route. There is another rainfall monitoring station at Glenmavis at NS 74200 68550, which is 600m from steel towers XX015 and XX016 of the XX Route. The average monthly rainfall can be viewed in Chart 9-1. The average rainfall at Castlecary is 1,385mm, and 965mm at Glenmavis³⁸.

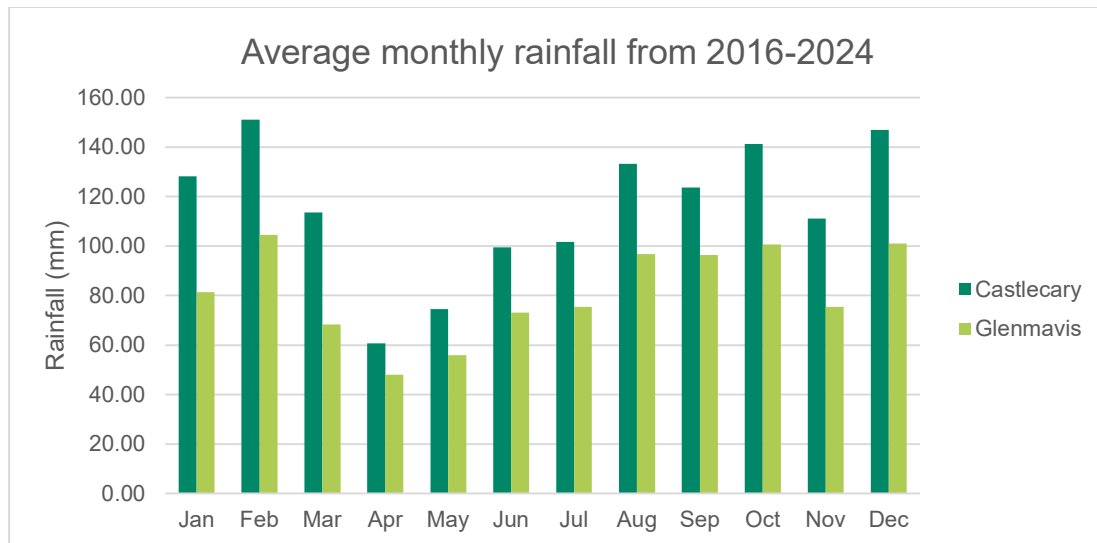


Chart 9-1 Average monthly rainfall in Castlecary and Glenmavis³⁸ (see footnote 38)

Geology and Soils

- 9.4.5 Geology is assessed in Chapter 10. In this section, geological aspects are discussed specifically in relation to hydrogeological conditions and processes.

³⁸ Scottish Rainfall Data, SEPA (Online). Accessed at: [Scottish Rainfall Data - provided by Scottish Environment Protection Agency \(SEPA\)](#) [Accessed 17 June2025]

Soils

9.4.6 The National Soil Map of Scotland³⁹ show that there are six main types of soil found across the Study Area. These include:

- Noncalcareous gleys (QMUNIT: 445) – the most common soil type in the Study Area. It is found between Cumbernauld and Wishaw, as well as around the Denny Substation in the north;
- Brown earths (QMUNIT: 169) – Found along ZG Route as well as around Allanton in the south of the XR Route;
- Alluvial soils (QMUNIT: 1) – Found in close proximity to the River Carron by ZG Route;
- Humus-iron podzols (QMUNIT: 448) – Patches found along WB Route;
- Peaty gleys with dystrophic blanket peat (QMUNIT: 450) – northeast of Cumbernauld along CB Route, as well as west of Riggend; and
- Organic soils (QMUNIT: 3) – east of Cumbernauld along WB Route, as well as at Eastmuir Plantation along XR Route.

Superficial Geology

9.4.7 Superficial deposits are widespread across the Study Area and are generally Devensian or Holocene in age. Table 9-9 lists the superficial deposits found within the Study Area⁴⁰.

Table 9-9 Superficial geology

Geological age	Geological formation	Description
Holocene	Peat	Consists of partially decomposed plant-mass within a waterlogged and acidic environment. Found in patches of varying sizes across the Project.
Holocene Devensian	Alluvium	Unconsolidated detrital material that was deposited by a river, consisting of clay, silt, sand, and gravel. Found in patches of varying sizes across the Project, the majority associated with watercourses. Largest areas situated around the River Carron.
	Raised Marine Deposits	Consists of gravel, sand, silt, and clay with organic debris, such as shells, present. Located between Denny and Falkirk.
Devensian	Till - Diamicton	Conglomerate of rock fragments of varying sizes which are sourced from a wide range of

³⁹ Soil Maps of Scotland at a scale of 1:250,000, Soil Survey of Scotland Staff (1981), Macaulay Institute for Soil Research, Aberdeen (Online). Available at: <https://soils.environment.gov.scot/> [Accessed 17 June2025]

⁴⁰ BGS Lexicon of Named Rock Units (2020), British Geological Survey BGS Lexicon of Named Rock Units - British Geological Survey

		lithologies. These are poorly sorted and are deposited within a clay matrix. The dominant superficial type, the vast majority of the Project has Till present within the Study Area.
	Glaciofluvial Ice Contact Deposits	Stratified sands and gravel with interbedded diamicton. Sporadic patches across the Project.
	Glaciofluvial Sheet Deposits	A mix of sand and gravel, with local lenses of silt, clay, or organic material. Sporadic patches across the Project.

Bedrock

- 9.4.8 There are two main geological formations found within the Study Area: the Scottish Coal Measures and the Clackmannan Group. The Scottish Coal Measures are the younger lithology and are concentrated on the east side of the Study Area, whilst the older Clackmannan Aquifer are found in the west. There are two series of intrusive igneous rocks, with the most common suite being the North Britain Late Carboniferous Tholeiitic Suite. The other suite is the North Britain Palaeogene Dyke Suite that can be found in the south of the Study Area.
- 9.4.9 The Study Area lies on the west limb of the Clackmannan Syncline, whose hinge is orientated north-to-south through Falkirk. This fold is asymmetrical, with dips on the western limb rarely exceeding 5°, whilst dip measurements can reach 30° on the eastern limb. The area has also undergone faulting primarily along an east-to-west orientation⁴¹.
- 9.4.10 Table 9-10 lists the main geological units found within the Study Area.

Table 9-10 Bedrock Geology

Geological age	Geological formation	Description
Palaeogene	North Britain Palaeogene Dyke Suite	Mafic intrusion of a series of dykes. Present in the south of XR Route, near Watstonfoot.
Carboniferous	North Britain Late Carboniferous Tholeiitic Suite	Represent a series of sill and dyke intrusions. Typically consists of dolerite, quartz-dolerite and quartz-microgabbro.
	Scottish Coal Measures	Repeated cycles of mudstone, siltstone, and sandstone, which coarsen upwards. The cycles are overlain by seat-earth and coal seams. Coal seams may exceed 0.3m thickness.

⁴¹ Geology of the Falkirk district Memoir for 1:50,000 geological sheet 31E (Scotland) (1998), B. Cameron, A.M. Aitken, M.A.E Brown, and D. Stephenson Geology of the Falkirk district, sheet 31E. Sheet memoir (Scotland)

Clackmannan Group (Passage Formation & Upper Limestone Formation)	Cyclical coarsening upward sequences of mudstone, siltstone, and sandstone. May also be seat earth, coal and / or marine limestones present in the stratigraphy.
--	--

Hydrogeology

Superficial Aquifers

- 9.4.11 There are no superficial aquifers listed within the Hydrogeology 625K Scale Map of the UK⁴². However, it is likely that some superficial deposits will hold small volumes of groundwater which could have the potential to support GWDTEs. Table 9-11 lists the superficial deposits found within the Study Area and their hydrological significance.

Table 9-11 Superficial aquifers

Geological formation	Hydrogeological significance
Peat	Peat has high water content but low permeability; generally, acts as a water-retaining layer rather than a productive aquifer.
Alluvium	Sands and gravel layers have the potential to be groundwater stores. Due to the alluvium deposits being centred around present day surface water bodies, they are likely a point of contact between surface water and groundwater.
Glaciofluvial deposits	Likely to store water. Will depend on how frequently lower permeability materials (such as clay or silt) are interbedded.
Raised marine deposits	These deposits aren't likely to be productive, as thick clay beds are common. But gravels beds within the deposit could be highly permeable forming a perched aquifer.
Till - Diamiction	These deposits will likely be unproductive. There may be small volumes of water situated within perched sand and gravel aquifers.

Bedrock Aquifers

- 9.4.12 There are two bedrock aquifers identified within the Study Area: Scottish Coal Measures and Clackmannan Aquifer Group (see Volume 2, Figure 9.2).
- 9.4.13 The Scottish Coal Measures underlies the Project. It is a moderately productive aquifer built of multi-layers which have been heavily mined, dominated by fracture flow with some minor intergranular flow.
- 9.4.14 The Clackmannan Aquifer Group also underlies the Project with the exception of the XX Route, XR Route, and the Wishaw Substation Extension. It is designated as a moderately

⁴² British Geological Survey (BGS). (2020). *Hydrogeology 625K digital hydrogeological map of the UK*. [online] Available at: <https://www.bgs.ac.uk/datasets/hydrogeology-625k/> [Accessed 26 Nov. 2025].

- productive aquifer and described as a multi-layered aquifer with low yields except where disturbed by mining. Flow is primarily through fractures and other discontinuities.
- 9.4.15 The Scottish Coal Measures and the Clackmannan Aquifer Group are both categorised as a part of the Carboniferous (mined) aquifer group⁴³. The Carboniferous (mined) aquifer group has a much higher permeability than the Carboniferous (unmined) aquifer group. Mining has generated more fractures and lines of weaknesses in which groundwater can flow through. Additionally, the removal of restrictive coal seams has allowed for greater groundwater flow. As a result of this mining, groundwater flow paths can reach to length of 1 to 10km.
- 9.4.16 The transmissivity of the aquifer ranges between 10-1000m²/day and specific capacity is 48-132m³/day/m. Both these properties indicate a moderate to high ability to transmit water and a moderate to high efficiency. Storativity, which represents the volume of water released is recorded as ~0.0001. For an unconfined moderately productive aquifer the storativity value is likely to be similar to the specific capacity as the water is released through flow through porous lithologies and so large amounts of water may be released. The storativity of ~0.0001 indicates a low storage for a moderately productive aquifer, and that water and flow is restricted, potentially due to confining layers. Therefore, the storativity value suggests that confined aquifers are present, potentially where impermeable coal seams or other lithologies are present. This may mean that during pumping, drawdown may occur quicker. The operational yield is recorded as 1,987-3,279m³/day. This is a high yield which is likely because of increased groundwater flow through shafts and cavities caused by mining as well as fractures.
- 9.4.17 There is limited data on the groundwater quality on BGS. There was also no groundwater quality data received from SEPA in the Study Area. However, records indicate that the groundwater chemistry is described as often anoxic and generally moderately to highly mineralised.

Groundwater Levels

- 9.4.18 Publicly available data on groundwater levels and flow within the Study Area is limited. While BGS GeoIndex³⁴³⁴ records several boreholes that provide groundwater level information, these measurements were typically taken during drilling and may not represent long-term or stable conditions. Therefore, they can only be used as an indicator of groundwater level.
- 9.4.19 Along the WB Route, there was only one BGS borehole located within the Study Area – Borehole BGS ID 799091 which is situated 110m from WB052 at NS 84823 79737. It had a groundwater level of approximately 33.3m below ground level (bgl) on the 24 September 1943, the day after a pumping test.
- 9.4.20 Throughout the XX Route only one tower (XX003) within the Ground Investigation (GI) report for XX Route - Easterhouse to Newarthill was found to have shallow groundwater levels within 2m bgl, although exact measurements were not taken. A design note (90ET1442 – Western Moffat Ground Investigation Report) found that only one borehole within the report had a ground water strike. This was at borehole XX035A-BHA at NS 79263

⁴³ British Geological Survey (BGS). (2015). Scotland's aquifers and groundwater bodies. Available at: <https://www2.bgs.ac.uk/groundwater/waterResources/ScotlandsAquifers.html> [Accessed: 27 Nov. 2025].

65252 which observed a water strike of 7.8m bgl. It was also noted that drilling flush water was typically lost to the bedrock strata at each rotary core location. This suggests that the groundwater level may be relatively deep. These boreholes were drilled in December 2024.

- 9.4.21 The BGS boreholes below described for the CB Route Removal, Proposed Denny North Substation Works and Wishaw Substation Extension are also applicable for the Upated Overhead Lines.
- 9.4.22 For the CB Route Removal, there is limited groundwater level information available. However, using borehole records from BGS Index and indication of shallow groundwater level can be estimated:
- BGS Reference: NS77SE5965/B8 – 3m borehole within sandstone and groundwater level is recorded at a 0.38m bgl. Located at NS 77426 74446, 100m from CB001;
 - BGS Reference: NS77SE5965/B3 – 2.7m borehole within Glacial Till and sandstone and groundwater level is recorded at a 0.61m bgl. Located at NS 77342 74400, 100m from CB001;
 - BGS Reference: NS77SE5965/B10 – 5m borehole within sandstone and groundwater level is recorded at a 0.91m bgl. Located at NS 77493 74507, 100m from CB001; and
 - BGS Reference: NS77SE5965/B11 – 3.4m borehole within sandstone and groundwater level is recorded at a 1.5m bgl. Located at NS 77539 74588, 170m from CB001.
- 9.4.23 For the Proposed Denny North Substation Works, there is limited groundwater level information available. However, using borehole records from BGS Index an indication of shallow groundwater level can be estimated:
- BGS Reference: NS88SW215/3 – groundwater level at 0.66m within the Glacial Till. Located at NS 82354 84057, 300m from the Proposed Denny North Substation Works; and
 - BGS Reference: NS88SW215/4 - groundwater level at 0.66m within the Glacial Till. Located at NS 82279 84404, 40m from the Proposed Denny North Substation Works.
- 9.4.24 For the Wishaw Substation Extension, there is limited groundwater level information available. However, using borehole records from BGS Index and indication of shallow groundwater level can be estimated:
- BGS Reference: NS75SE14771/2D – groundwater levels of initially at 6.4m bgl and then rose to 3m bgl. The borehole was 27m deep. Groundwater was struck when drilling through sandstone. Located at NS 79301 53793, 180m east from the Wishaw Substation Extension; and
 - BGS Reference: NS75SE14771/4 – groundwater level at 4.4m bgl, borehole 13m deep. Located at NS 79414 53832 250m east from the Wishaw Substation Extension.
- 9.4.25 For Cumbernauld Substation Extension, there is limited groundwater level and flow data publicly available for this assessment. However, we can assume that shallow groundwater flows from the higher ground found to the south of the Project with the topography towards Glenycryan Burn and Bonny Water / Red Burn.

- On BGS GeoIndex, there are several boreholes around the Site which may be used to indicate the groundwater levels. However, the levels found were likely taken during borehole drilling so will not reflect accurate changes to water levels on a temporal or spatial scale. They can only provide an indication as to where the water table is sitting:
 - BGS Reference: NS77SE5965/B8 – 3m borehole within sandstone and groundwater level is recorded at a 0.38m below ground level (bgl). Located at NS 77426 74446, 9m from the Project.
 - BGS Reference: NS77SE5965/B3 – 2.7m borehole within Glacial Till and sandstone and groundwater level is recorded at a 0.61mbgl. Located at NS 77342 74400, 10m from the Project.
 - BGS Reference: NS77SE5965/B10 – 5m borehole within sandstone and groundwater level is recorded at a 0.91mbgl. Located at NS 77493 74507, 10m from the Project.
 - BGS Reference: NS77SE5965/B11 – 3.4m borehole within sandstone and groundwater level is recorded at a 1.5mbgl. Located at NS 77539 74588, 60m from the Project.
 - BGS Reference: NS77SE5965/B4 – 3m borehole within Glacial Till and sandstone, groundwater is recorded at a 0.61mbgl. Located at NS 77286 74325, 50m from the Project.
- 9.4.26 No groundwater level information from BGS GeoIndex was found for the AA Route Partial Undergrounding and Bonnybridge Substation Extension.

Groundwater Springs

- 9.4.27 A spring is a natural outflow of groundwater formed where the water table intersects ground level. They tend to occur where the permeability of the lithology below the spring is lower than the lithology above, trapping the groundwater above the water table and channelling it towards the surface. They may also be located where there is a depression in the landscape which may intersect the water table, resulting in a spring.
- 9.4.28 These can be hard to locate as they may not be included on a map as the water table varies with the seasons, often being higher in wet winters than dry summers, which can result in seasonal springs. The springs within the Study Area are identified within Table 9-12.

Table 9-12 Groundwater Springs

Spring name	Location	National Grid Reference	Approx. distance from Cable Route	Lithology
Spring-01	Northwest of Denny Substation	NS8301584828	510m from ZG Route (northeast)	Passage Formation overlain by till
Spring-02	Spring next to pond (southwest from Denny Substation)	NS8345584098	625m from ZG Route (northeast)	Passage Formation overlain by till

Spring-03	North of the River Carron to the west of the factory at Millview	NS8305282472	558m from ZG Route (southwest)	Upper Limestone Formation overlain by till
Spring-04	South of Crowbank	NS8006775460	125m from WB Route (west)	Passage Formation overlain by till
Spring-05	Southwest of Palacerigg County Park	NS7707073453	1,040m from WB Route (west)	Passage Formation overlain by till
Spring-06	On the banks of Shank Burn, east of Glenmill.	NS7554769503	323m from WB Route (west)	Scottish Coal Measures
Spring-07	Airdrie Golf Club, south of Blackwalk Plantation	NS7579267102	692m from XX Route (southwest)	Scottish Coal Measures overlain by till
Spring-08	South bank of South Calder Water, north of Brucefield	NS8416157999	169m from XR Route (southwest)	Passage Formation overlain by alluvium
Spring-09	Brucefield	NS8433957693	146m from XR Route (southwest)	Passage Formation overlain by glaciofluvial ice contact deposits

Groundwater dependent terrestrial ecosystems

Potential areas of GWDTEs were identified from NVC surveys undertaken in spring to autumn 2025, with an importance for each NVC habitat given by ecology. The groundwater dependency level has been identified from Annex 1 of the UK Technical Advisory Group on the Water Framework Directive (UKTAG) and local geology. Potential GWDTEs have been assessed and identified in Volume 3, Appendix 9.6 GWDTE Assessment, and more information can be found in Chapter 8 Biodiversity.

Groundwater WFD Classification

9.4.29 According to SEPA's Water Classification Hub²⁷ the Study Area covers several WFD groundwater bodies (see Volume 2, Figure 9.3 9-):

- Carron Sand and Gravel (ID: 150774) – good overall status (2024);
- Falkirk (ID: 150511) – poor overall status (2024) within the Scottish Coal Measures Aquifer Group;
- Castlecary (ID: 150560) – good overall status (2024) within the Clackmannan Aquifer Group;
- Kirkintilloch (ID: 150616) – poor overall status (2024) within the Clackmannan Aquifer Group;

- Slamannan (ID: 150546) – poor overall status (2024) within the Scottish Coal Measures Aquifer Group;
- Glenboig (ID: 150436) – good overall status (2024) within the Clackmannan Aquifer Group;
- Glasgow and Motherwell (ID: 150677) – poor overall status (2024) within the Scottish Coal Measures Aquifer Group;
- Denny (ID: 150514) – poor overall status (2024) within Clackmannan Aquifer Group;
- Whitburn (ID: 150509) – good overall status (2024) within the Clackmannan Aquifer Group; and
- Steps (ID: 150423) – good overall status (2024) within the Clackmannan Aquifer Group.

9.4.30 Please refer to Volume 3, Appendix 9.3 for the full breakdown of each of the WFD bodies within the Study Area.

Groundwater drinking protected areas

9.4.31 SEPA has designated areas as Drinking Water Protected Zones (DWPZ), in line with the Water Environment (Drinking Water Protected Areas) (Scotland) Order 2013⁴⁴. In Scotland, the entire aquifer is within the DWPZ rather than just the source point of the drinking water supply. Therefore, all groundwater bodies listed above are within a DWPZ.

Groundwater conceptual model

9.4.32 The bedrock aquifers present throughout the Study Area form part of the wider Carboniferous – Extensively Mined for Coal aquifer group, which is classified as a moderately productive aquifer. Recharge is likely to occur primarily through rainfall infiltrating thin, permeable superficial deposits—such as alluvium, peat and glaciofluvial materials. To a lesser extent, recharge may also occur through less permeable deposits like till particularly where these contain interspersed sand and gravel layers. In some areas, groundwater may become perched above less permeable clay and silt layers.

9.4.33 Groundwater movement primarily occurs through fractures, which are typically concentrated along fault lines and within the upper weathered zones of the aquifer. In areas where extensive mining has taken place, groundwater may also flow through abandoned mine shafts and along excavated coal seams.

9.4.34 Due to limited data, it is not possible to accurately define the overall direction of groundwater flow within the Scottish Coal Measures Aquifer Group in the Study Area. However, it is likely that groundwater follows bedding planes, mine shafts, fractures, and fault lines. In the upper weathered zones, flow is also expected to follow the topography, moving downgradient and generally in the direction of major river systems.

⁴⁴ Scottish Ministers (2013) *The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2013* (SSI 2013/29). Edinburgh: The Scottish Government. Available at: <https://www.legislation.gov.uk/ssi/2013/29/contents/made> [Accessed 21 July 2025]

Surface Water features

9.4.35 Surface water features found within the Study Area are listed in this section. A full list of all surface water features that were considered with their descriptions, locations, associated WFD classified waterbody sub-catchment and allocated IDs is given in Volume 3, Appendix 9.1 and Volume 3, Appendix 9.3.

9.4.36 There are three WFD catchments situated throughout the Study Area. They include Forth Estuary (South) Coastal, River Carron (Falkirk) and the River Clyde. The majority of the Project is situated within the River Clyde Catchment which covers the Southern half of the Study Area.

9.4.37 The relevant WFD bodies to this Project are discussed in more detail below.

Forth Estuary (South) Coastal Catchment - Pow Burn / Tor Burn

9.4.38 Pow Burn / Tor Burn (ID: 3206) is a WFD body within the Forth Estuary (South) Coastal Catchment. The Burn itself is over 830m away from ZG Route but several watercourses associated with it and within its catchment (see descriptions for PB-4, PB-5, PB-6 in Volume 3, Appendix 9.1) flow beneath temporary Access Tracks to the works. See Volume 2, Figure 9.1 (Sheet 1) for catchment locations.

9.4.39 Pow Burn / Tor Burn is a watercourse within the Forth Estuary (South) Coastal Catchment and is sourced at approximately NS 82320 85578. The main stem is approximately 7.6km in length. It has been designated as a heavily modified water body on account of physical alterations that cannot be addressed without a significant impact on the drainage of agricultural land. SEPA assigned it as at good ecological potential in 2024. A full breakdown of the SEPA WFD classification is provided in Volume 3, Appendix 9.3.

9.4.40 The water feature is sourced as Tor Burn at approximately NS 82326 85580 and flows east through mostly agricultural land use and beneath the M9 at NS 85711 85858 and is then named the Pow Burn from approximately NS 85917 85696. It continues to flow east through predominantly agricultural land until it enters the River Forth at NS 91662 87488. Pow Burn / Tor Burn has an approximate estimated average daily flow that is exceeded on 95 out of every 100 days (Q95 flow) of 0.01m³/s.

9.4.41 Pow Burn / Tor Burn has been scoped into Uprated Overhead Line and Proposed Denny North Substation Works.

River Carron Catchment – River Carron

9.4.42 The River Carron is situated in the northern half of the Study Area around the A8004 and B905. River Carron flows through agricultural rural areas and both residential and industrial urban areas of Falkirk and Grangemouth before entering the Firth of Forth at approximately NS 94679 84025. ZG Route directly crosses the River Carron at NS 83881 81594, within the SEPA WFD body River Carron (Avon Burn to Bonny Water Confluences) (ID: 4201). It may be indirectly and directly impacted by works for the Uprated Overhead Line. Several water features associated with the River Carron catchment are scoped in for assessment and these are listed with further details in Volume 3, Appendix 9.1. See Volume 2, Figure 9.1 (Sheets 1 and 2) for catchment locations.

9.4.43 From the site visit carried out in September 2025, the River Carron was observed to be a small meandering lowland stream with some plane-riffle sections. The bed looked to be

mostly composed of gravel and cobbles with some boulders. There was evidence of deposition around the banks of the watercourse with some gravel and cobbles.

9.4.44 SEPA has divided the River Carron into two distinct WFD bodies.

- River Carron (Avon Burn to Bonny Water Confluences) (ID: 4201) is located within the River Carron (Falkirk) catchment. The main stem extends approximately 4.4km. It has an approximate estimated Q95 flow of 0.61m³/s. In 2024, SEPA assigned it an overall status of poor. This classification appears to be primarily influenced by issues relating to fish populations and the presence of fish migration barriers, which are likely affecting ecological connectivity and habitat quality. A full breakdown of WFD classification is provided in Volume 3, Appendix 9.3.
- River Carron (Bonny Water Confluence to Carron Estuary) (ID: 4200) is situated within the River Carron (Falkirk) catchment and is approximately 6.8km in length. It has an approximate estimated Q95 flow of 0.01m³/s. It was also determined to be at poor overall WFD status in 2024. The underlying pressures contributing to this status are understood to be consistent with those affecting the upstream section, likely including barriers to fish passage and ecological degradation. Please refer to Volume 3, Appendix 9.3 for the full breakdown of each of the WFD bodies within the Study Area.



Plate 9-1 River Carron, photographed 27 September 2025 from NS 84065 81538, looking upstream.

River Carron Catchment – Bonny Water / Red Burn

- 9.4.45 Bonny Water / Red Burn (ID: 4205) is located within the River Carron catchment. This watercourse, its tributary the Rowan Tree Burn (BW-1) and several other associated water features within the Bonny Water / Red Burn catchment (see Volume 3, Appendix 9.1 for

descriptions) have been scoped into the assessments for WB Route, CB Route Removal, AA Route Partial Undergrounding, Cumbernauld Substation Extension and Bonnybridge Substation Extension. See Volume 2, Figure 9.1 (Sheets 2, 3 and 4) for catchment locations.

- 9.4.46 The main stem of this water body extends approximately 13.9km. Bonny Water / Red Burn sources as a channelised drain at NS 75844 78306 and flows east initially alongside the Forth and Clyde Canal, then through mixed land use of agricultural and forested rural areas and the residential and industrial urban areas of Bonnybridge before entering the River Carron at NS 84500 81453. It has an approximate estimated Q95 flow of 0.30m³/s.
- 9.4.47 From the site visit carried out in September 2025, Bonny Water / Red Burn was observed to be a small meandering lowland stream with some evidence of straightening. The bed looked to be mostly composed of gravel and cobbles with some boulders. This water body is designated by SEPA as a Heavily Modified Water Body (HMWB). This designation reflects significant physical alterations to the channel and surrounding environment, which are considered necessary for land use purposes—specifically, the drainage of agricultural land. As such, these modifications cannot be reversed without causing substantial socio-economic impacts.
- 9.4.48 In SEPA's 2024 classification, Bonny Water / Red Burn was assessed as at moderate ecological potential, as further improvement may be limited by the nature of its physical alterations. Please refer to Volume 3, Appendix 9.3 for the full breakdown of each of the WFD bodies within the Study Area.



Plate 9-2 Bonny Water, photographed 27 September 2025 from NS 84179 81292, looking downstream.

River Carron Catchment – Glencryan Burn

- 9.4.1 The Glencryan Burn (ID: 4206) is located within the River Carron catchment and flows to the east of Cumbernauld through open scrubland and some residential and industrial areas where it joins Bonny Water / Red Burn at NS 77077 74291. It has been scoped into

the assessment for WB Route and Cumbernauld Substation Extension. See Volume 2, Figure 9.1 (Sheet 4) for catchment location.

- 9.4.2 Glencryan Burn was assessed as moderate overall WFD status in 2024. A full breakdown of the WFD classifications is provided in Volume 3, Appendix 9.3. It has an approximate estimated Q95 flow of 0.01m³/s. The site visit conducted in August 2025 indicated it to be a small watercourse, approximately 2m wide and 1m deep from the top of the bank, with a mixed bed of gravel, cobbles and boulders and dense riparian vegetation either side.

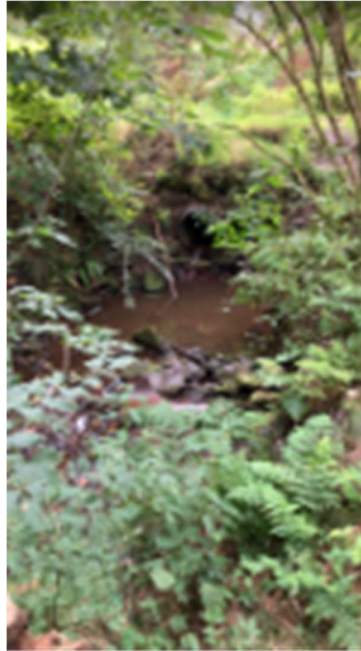


Plate 9-3 Glencryan Burn, photographed 28 August 2025 from NS 78205 73674, looking directly across the channel.

River Clyde Catchment - River Clyde

- 9.4.3 Two watercourses – Catchment 17-1 and Catchment 17-2 - within the River Clyde (Mouse Water to Strathclyde Loch outflow) (ID: 10919) catchment area have been scoped in for assessment for WB Route and Wishaw Substation Extension and are located 300m and 30m away from the Site respectively. Details are presented in Volume 3, Appendix 9.1. See Volume 2, Figure 9.1 (Sheet 11) for catchment locations.
- 9.4.4 River Clyde (Mouse Water to Strathclyde Loch outflow) was assigned good overall WFD status in 2024. The full classification breakdown is presented in Volume 3, Appendix 9.3. Data available from the Clyde at Daldowie peak flow station provided by the National River Flow Archive³⁰ shows the River Clyde has an approximate Q95 flow of 9.57m³/s. The land use surrounding most of this stretch of river's course is agricultural, with some villages and open heathland in places.

River Clyde Catchment – Luggie Water

- 9.4.5 Luggie Water (upstream of Mollins Burn) (ID: 10751) is located within the River Kelvin catchment. Luggie Water and several associated water features within its catchment (see Volume 3, Appendix 9.1 for details) are potentially impacted by works on the WB Route,

with the WB Route crossing Luggie Water at NS 78099 72428. The main stem of this water body is approximately 11.1km in length. In SEPA's 2024 classification, Luggie Water was assessed as at poor overall status. Please refer to Volume 3, Appendix 9.3 for the full breakdown of each of the WFD bodies within the Study Area. See Volume 2, Figure 9.1 (Sheet 3, 4 and 5) for catchment locations.

- 9.4.6 From the site visit carried out in September 2025, Luggie Water was observed to be a small plane-riffle watercourse with some minor step pools. The bed looked to be mostly composed of gravel and cobbles with some boulders.
- 9.4.7 Luggie Water sources at approximately NS 79524 72178 in an area of open heathland, forestry plantations and agricultural fields and receives inflows from several channelised drains across the region as it flows west. It flows through a similarly rural landscape before entering urbanised areas in its lower stretches as it skirts the southern edge of Cumbernauld and passes through the town of Kirkintilloch. It has a confluence with the River Kelvin at NS 65325 74469. Luggie Water has an approximate estimated Q95 flow of 0.01m³/s.



Plate 9-4 Luggie Water, photographed 28 September 2025 from NS 78590 72373, looking at the downstream.

River Clyde Catchment – South Burn

- 9.4.8 South Burn (ID: 10743) is a watercourse located within the River Clyde catchment with a main stem extending approximately 5.3km in length. It is considered here as potentially impacted by the uprating of the XX Overhead Lines. South Burn itself is over 580m away from the XX Route, but several watercourses associated with it and within its catchment (SB-3, SB-5, SB-6, SB-7, SB-8, SB-9, SB-10, SB-12, SB-13, SB-15, SB-16) are located within 50m of the works. Details of these water features are presented in Volume 3, Appendix 9.1. See Volume 2, Figure 9.1 (Sheets 5, 6 and 7) for catchment locations.

9.4.9 This watercourse has been designated as a WFD HMWB. The designation reflects the significant physical alterations that are considered essential for managing local hydrological and geotechnical conditions. Specifically, these modifications cannot be removed or mitigated without posing a substantial risk of increased flooding or ground subsidence, highlighting the functional necessity of the current engineered state of the channel. Whilst South Burn sources in a rural area of agriculture and open heathland at approximately NS 78626 68281, it flows west through largely residential urban land use of Airdrie and the eastern areas of Coatbridge. It appears to enter North Calder Water at approximately NS 75007 63785, though much of its flow is underground due to the urbanised areas along its lower reaches. South Burn has an approximate estimated Q95 flow of 0.01m³/s.

9.4.10 It was assessed as at poor ecological potential by SEPA in 2024. Further details on these classifications are provided in Volume 3, Appendix 9.3.

River Clyde Catchment - Shirrel Burn / Thankerton Burn / Legbrannock Burn

9.4.11 Shirrel Burn / Thankerton Burn / Legbrannock Burn (ID: 10067) is a watercourse in the River Clyde catchment. It is potentially impacted by the uprating of the XX and XR Overhead Lines, with the XX Route crossing it at NS 79064 60670. The main stem of the watercourse is approximately 9.0km long. It has been designated as a HMWB due to physical alterations that cannot be addressed without a significant impact from an increased risk of subsidence or flooding. Two additional water features within the catchment – ShirrelB-5 and ShirrelB-6 - are considered as potentially impacted, and these are detailed in Volume 3, Appendix 9.1. See Volume 2, Figure 9.1 (Sheet 8) for catchment locations.

9.4.12 Each of the three names applied to this WFD water feature refer to different stretches of the same watercourse. It sources at approximately NS 79796 60931 as Legbrannock Burn and flows west where it is referred to as Thankerton Burn as it passes through Wester Holytown, and then it is known as Shirrel Burn as it flows through Shirrel before entering North Calder Water at NS 73142 61919. After sourcing in a rural area, the bulk of this route passes through urban areas of residential, commercial and industrial land use in the towns of Holytown and Bellshill. Shirrel Burn / Thankerton Burn / Legbrannock Burn has an approximate estimated Q95 flow of 0.01m³/s.

9.4.13 From the site visit carried out in September 2025, Legbrannock Burn was observed to be a small slightly incised watercourse which was gently meandering. There was an existing bridge at the roadside. The bed was not observed due to the high vegetation level (see Plate 9-5).

9.4.14 SEPA assessed the overall status of this watercourse as at poor ecological potential in 2024. The full list of classifications is broken down in Volume 3, Appendix 9.3.



Plate 9-5 Legbrannock Burn, photographed 29 September 2025 from NS 79080 60687, looking downstream.

River Clyde Catchment - North Calder Water

- 9.4.15 North Calder Water is in the River Clyde catchment. It is assessed as potentially impacted by the uprating of the XX Overhead Line and is crossed by the XX Route at approximately NS 78895 65753. It flows roughly southwest from Hillend Reservoir (whilst the source of North Calder Water itself is the Black Loch, a further 2.3km north, the section described here is the only one within the Study Area) through mostly agricultural land and through some industrial urban areas around Airdrie and has a confluence with Shotts Burn at NS 77678 63820. See Volume 2, Figure 9.1 (Sheets 5 and 7) for catchment locations.
- 9.4.16 SEPA designates North Calder Water into two sections relevant to the Project:
- North Calder Water (downstream of Hillend Reservoir to Shotts Burn) (ID: 10062) with an approximate length of 9.7km and an approximate estimated Q95 flow of 0.36m³/s. SEPA assessed the overall status of this water feature as at poor in 2024. A full breakdown of the classifications awarded this watercourse is given in Volume 3, Appendix 9.3. Three associated water features in the catchment of this stretch of North Calder Water are considered for assessment – NCW1-3, NCW1-4 and NCW1-5 – and these are described in further detail in Volume 3, Appendix 9.1; and

- 9.4.17 North Calder Water (Shotts Burn to Luggie Burn) (ID: 10061) with an approximate length of 13.4km and an approximate estimated Q95 flow of 0.02m³/s. SEPA assessed the overall status of this water feature as at poor in 2024. A full breakdown of the classifications awarded this watercourse is given in Volume 3, Appendix 9.3. Two associated water features in the catchment of this stretch of North Calder Water are considered for assessment – Catchment 9-2 and Catchment 9-3 – and these are described in further detail in Volume 3, Appendix 9.1.
- 9.4.18 From the site visit carried out in September 2025, North Calder Water was observed to be a low gradient passively meandering with cobbles and boulders and retains some natural features.



Plate 9-6 North Calder Water, photographed 29 September 2025 from NS 78911 65794, looking upstream and riverbank.

River Clyde Catchment - Shotts Burn

- 9.4.19 Shotts Burn (ID: 10070) is a watercourse in the River Clyde catchment, potentially impacted by the uprating of the XX Overhead Lines and crossed by the XX Route at NS 78656 63118. The main stem is approximately 10.0km in length. Shotts Burn sources at approximately NS 83970 62968 from a series of channelised agricultural drains and flows west before entering North Calder Water at NS 77678 63820. Most of the land use along this path is agricultural with some open heathland and occasional industrial areas. Shotts Burn has an approximate estimated Q95 flow of 0.01m³/s. One additional water feature associated with Shotts Burn – Clattering Burn (ShottsB-3), a tributary that flows into Shotts

Burn at NS 78792 62953 - is assessed as potentially impacted by the XX Route (see Volume 3, Appendix 9.1 for details). See Volume 2, Figure 9.1 (Sheet 7) for catchment locations.

- 9.4.20 From the site visit carried out in September 2025, Shotts Burn was observed to be a small meandering plane-riffle watercourse with some minor step pools. The bed looked to be mostly composed of gravel and cobbles with some bedrock (see Plate 9-7).
- 9.4.21 In 2024, SEPA assessed the overall status of Shotts Burn as poor. The full range of classifications given the watercourse are presented in Volume 3, Appendix 9.3.



Plate 9-7 Shotts Burn, photographed 29 September 2025 from NS 78679 63108, looking directly across the channel.

River Clyde Catchment - Auchter Water

- 9.4.22 Auchter Water (ID: 10075) is a watercourse in the River Clyde catchment. It is at potential impact from the upgrading of the XR Overhead Line and flows beneath the XR Route at several locations: NS 84468 55807, NS 84439 55700, NS 83977 55156 and NS 83623 54949. Auchter Water has an approximate length of 12.5km and sources in the Kingshill forestry plantation at approximately NS 88163 53403. It flows roughly northwest through a mostly rural landscape of agricultural land use and open heathland and moorland. Auchter Water has an approximate estimated Q95 flow of 0.01m³/s. Several associated water features in the Auchter Water catchment are potentially impacted and are presented in Volume 3, Appendix 9.1. See Volume 2, Figure 9.1 (Sheet 9, 10 and 11) for catchment locations.

- 9.4.23 From the site visit carried out in September 2025, Auchter Water was observed to be a low gradient passively meandering watercourse but with evidence of having been straightened in some locations in the past (see Plate 9-8).
- 9.4.24 Auchter Water was assessed as at a poor overall status by SEPA in 2024. The full list of SEPA's classifications breakdown is presented in Volume 3, Appendix 9.3.



Plate 9-8 Auchter Water, photographed 29 September 2025 from NS 83293 54932, looking upstream.

River Clyde Catchment - South Calder Water

- 9.4.25 South Calder Water is in the River Clyde catchment. It is potentially impacted by the uprating of the XR Overhead Lines and flows beneath the XR Route at NS 84298 58108. The river itself sources among a forestry plantation at approximately NS 91281 61245. It flows west through a patchwork of agricultural fields, heathland and smaller urban areas and receives inflows from multiple tributaries including Auchter Water at NS 83278 56727 and Tillan Burn at NS 78740 57353. The river itself continues beyond this point to flow into Strathclyde Loch at NS 72881 57749 where it enters the River Clyde. Data from the South Calder Water at Forgewood peak flow station indicates that this river has an approximate estimated Q95 flow of 0.69m³/s. See Volume 2, Figure 9.1 (Sheet 9) for catchment locations.
- 9.4.26 South Calder Water includes two WFD waterbodies relevant to the Project:

- South Calder Water (upstream of Auchter Water) (ID: 10074) is a section of South Calder Water with a main stem of approximately 10.2km in length. It is a receptor for several water features assessed, and these are listed and detailed in Volume 3, Appendix 9.1.
 - South Calder Water (Auchter Water to Tillan Burn) (ID: 10073) has a main stem approximately 8.1km in length. It is a receptor for two assessed water features – Catchment 13-1 and Catchment 13-2 – and these are detailed in Volume 3, Appendix 9.1.
- 9.4.27 From the site visit carried out in September 2025, South Calder Water was observed to be low gradient passively meandering with cobbles and boulders and retains some natural features. There was some evidence of poaching at the adjacent pasture field.
- 9.4.28 SEPA assessed both South Calder Water (u/s Auchter Water) and South Calder Water (Auchter Water to Tillan Burn) as poor overall status in 2024. The full list of SEPA's classifications breakdown is presented in Volume 3, Appendix 9.3.



Plate 9-9 South Calder Water, photographed 29 September 2025 from NS 84389 58150, looking downstream.

River Clyde Catchment - Tillan Burn

- 9.4.29 Tillan Burn (ID: 10750) in the River Clyde has a main stem length of approximately 9.2km. It is potentially impacted by the uprating of the XR Overhead Lines, flowing beneath the XR Route at NS 80278 60221. Tillan Burn sources at an approximately NS 84402 60973 from a series of channelised drains at the Heatherhead forestry plantation and flows roughly west

through mostly agricultural, pastoral and forested land use before entering South Calder Water at NS 78738 57354. Tillan Burn has an approximate estimated Q95 flow of 0.01 m³/s. Three associated assessed water features (TB-1, TB-2 and TB-4) are within the Tillan Burn catchment as detailed in Volume 3, Appendix 9.1. See Volume 2, Figure 9.1 (Sheet 8) for catchment locations.

- 9.4.30 From the site visit carried out in September 2025, Tillan Burn was observed to be a low gradient passively meandering watercourse with a riverbed composed of boulders and cobbles.
- 9.4.31 Tillan Burn was assessed as poor overall status by SEPA in 2024. The full classification breakdown is presented in Volume 3, Appendix 9.3.



Plate 9-10 Tillan Burn, photographed 29 September 2025 from NS 80240 60210, looking upstream.

Forth and Clyde Canal

- 9.4.32 The Forth and Clyde Canal is potentially impacted by works on the New-build Overhead Line as the WB Route crosses the canal at NS 84857 80338. It has been divided by SEPA into several WFD bodies. The Forth and Clyde Canal (Wyndford to Rough Castle) (Water Body ID: 3) is within the Study Area and assessed for potential impacts. It spans approximately 9.5km in length. It has been designated as an Artificial Water Body under WFD criteria, reflecting its wholly constructed nature. This designation is due to physical alterations essential for navigation, which cannot be feasibly removed or modified without causing significant disruption to the canal's operational function as a navigable waterway.

- 9.4.33 As its name suggests, the Forth and Clyde Canal connects the major rivers Forth and Clyde, sourcing from the River Carron at NS 90610 82207 approximately 2.7km from its confluence with the Firth of Forth and flowing west into the River Clyde at NS 44993 73481. Along this course, it flows through a mixed landscape of agricultural, forestry, residential and industrial land use. The Forth and Clyde Canal has an approximate estimated Q95 flow of 0.01m³/s. See Volume 2, Figure 9.1 (Sheet 2) for catchment locations.
- 9.4.34 In 2024, SEPA assessed the overall status of the Forth and Clyde Canal (Wyndford to Rough Castle) as good ecological potential. Please refer to Volume 3, Appendix 9.3 for the full breakdown of WFD classification.



Plate 9-11 Forth and Clyde Canal, photographed 27 September 2025 from NS 84830 80335, looking downstream.

Flood Risk

- 9.4.35 A full analysis and discussion of the baseline flood risk on the three substation sites is provided in Volume 3, Appendix 9.4: Flood Risk Assessment. This analysis was informed by the SEPA Flood Maps 3.0 dataset along with other sources and was conducted according to the relevant guidance from SEPA, the NPF4, and local development plans. The following sections summarise the findings of these reports.

Proposed Denny North Substation Works

- 9.4.36 **Historic flood events:** No historic flood events have been reported on or near the Site.

- 9.4.37 **Coastal flood risk:** The Site is at an elevation of approximately 100mAOD, and is 6km from the nearest coastal floodplain, so is not considered to be at risk of coastal flooding.
- 9.4.38 **Fluvial flood risk:** The major watercourse nearest the Site is the River Carron, 1.4km to the south. This is not considered to pose any flood risk to the Project. Several small watercourses run near the Site, which are believed to be small burns or field drainage. As the Project is sited on local high ground, these watercourses flow away from the Site and do not pose a flood risk.
- 9.4.39 **Pluvial flood risk:** SEPA flood maps indicate several areas of pluvial (surface water) flood risk near the Project, however these coincide with known drainage features and wetlands which do not pose flood risk to the Project. Some areas of ponding are indicated on Site; however, these are likely to arise from the coarse nature of the SEPA flood risk model, and errors in the LiDAR data used. There is no pluvial flood risk to the site.
- 9.4.40 **Other sources of flood risk:** The Project was assessed against SEPA reservoir inundation mapping, canal locations, and water distribution networks. None of these features were found close to the Site and so are not considered to pose any flood risk.

Bonnybridge Substation Extension

- 9.4.41 **Historic flood events:** No historic flood events have been reported on or near the Site.
- 9.4.42 **Coastal flood risk:** The Site is at an elevation of approximately 29mAOD, and is 4.1km from the nearest coast, so is not considered to be at risk of coastal flooding.
- 9.4.43 **Fluvial flood risk:** The major watercourse nearest the Site is Bonny Water, which is directly northwest of the Site. However, this is not considered to pose any flood risk to the Project, as the flood extents reach to 19mAOD in the worst case, which is approximately 10m below the proposed ground level of the Project. Several small watercourses run near the Site, including the Rowan Tree Burn and an assumed field drainage ditch. Flood extents from these features are not predicted to affect the Project. A topographical analysis has found no overland flow routes by which flooding from these watercourses could reach the Site.
- 9.4.44 **Pluvial flood risk:** SEPA flood maps indicate an area of pluvial (surface water) flood risk near the Project along an existing access road to the north, however this is outwith the area of the Project and is may be a computational artefact of the modelling approach, which generally does not consider site-specific drainage which would remove such surface water from existing developments. The existing substation infrastructure is assumed to have drainage up to the 0.5%AEP event. As such there is no pluvial flood risk to the Site.
- 9.4.45 **Other sources of flood risk:** The Project was assessed against nearby reservoir locations, and water distribution networks, which were found to not be close enough to the Site to be considered sources of flood risk. The Rowan Tree Burn and another small watercourse are culverted under Falkirk Road to the southwest and southeast of the Site respectively. Conveyance capacity of each culvert has not been assessed in this case, however the topography of the surrounding area means that flood water from both structures would be directed away from Site and back towards the Bonny Water.

- 9.4.46 The Forth and Clyde canal runs 500m to the south of the Site, but topographical assessment found that canal failure would only cause flooding of the small watercourses already considered, which do not have potential to impact the Site. Thus, there is no flood risk associated with any form of infrastructure failure.

Wishaw Substation Extension

- 9.4.47 **Historic flood events:** No historic flood events have been reported on or near the Site.
- 9.4.48 **Coastal flood risk:** The site of the Project is at an elevation of approximately 109mAOD, and is 24km from the nearest coastal floodplain, so is not considered to be at risk of coastal flooding.
- 9.4.49 **Fluvial flood risk:** The Gowkthrapple Burn flows southeasterly away from the Site around 180m south of the Project. The burn is located in a steep-sided valley with normal water elevation 5m below the Site, therefore there is no risk of fluvial flooding predicted to the site.
- 9.4.50 **Pluvial flood risk:** SEPA flood maps indicate several areas of pluvial (surface water) flood risk near the Project, likely arising from a surface water flow through a rail underpass to the north of the Site. This leads to an accumulation of water in a small area north of the Site but does not appear to impact the substation platform itself.
The main platform is indicated to be affected by low likelihood flood risk (<0.1%AEP). The surface water accumulation indicated by the flood maps does not appear to arise from overland flows, so is assumed to be surface water which would be collected and drained by the existing site drainage network. The existing drainage is likely to be designed to manage a 0.5%AEP flood event, so there may still be isolated ponding in a 0.1% AEP case, however this is not expected pose any risk to the Project, as the critical infrastructure is already designed to be above ground level for operational purposes. Thus, there is considered to be low surface water flood risk on Site, which should not prevent development of this nature following NPF4 guidance.
- 9.4.51 **Other sources of flood risk:** The Project was assessed against nearby reservoir locations, canal locations, and water distribution networks. None of these features were found close to the Site and so are not considered to pose any flood risk.

Cumbernauld Substation Extension

- 9.4.52 **Historic Flood Events:** No historic flood events have been reported on the site.
- 9.4.53 **Coastal Flood Risk:** Due to the inland nature of the site, there is no risk posed by coastal flooding.
- 9.4.54 **Fluvial Flood Risk:** The Red Burn and Glencryan Burn, are located at a lower level than the site and therefore do not pose a fluvial flood risk. However, there is a small and intermittent watercourse which was identified through hydraulic modelling and is predicted to impact the site by overflowing at a critical juncture and triggering flow into the existing substation compound. The magnitude of this flooding indicates a medium impact to the site, although inbuilt mitigation measures are discussed in the Flood Risk Assessment which would reduce this to a negligible impact.

- 9.4.55 **Pluvial Flood Risk:** Through reference to SEPA Flood Maps and hydraulic modelling it has been determined that there is some pluvial flood risk to the site posed by surface water flows onto the existing substation from the hillside to the southeast. This constitutes low impact flooding. Excess surface water drains from the substation through the access road, causing flow over Forest Road which eventually travels northward to the Red Burn, potentially impacting nearby footpaths and the railway line in the Red Burn valley.
- 9.4.56 **Other Sources of Flood Risk:** The Project was assessed against SEPA reservoir inundation maps, canal locations, and local water distribution and sewerage networks where data was available. This study determined that none of these sources pose any flood risk to the site.

Environmental impact events

- 9.4.57 A SEPA Freedom of Information request on 05 September 2025 included information on environmental impact events within the Study Area. However, there were no water-related events listed as Category 1 (events causing environmental damage or increasing such damage unless action is taken, and/or they require natural recovery for more than six months (or up to ten years for groundwater), where natural recovery is feasible) or Category 2 (events likely to continue causing environmental harm or exacerbating such harm without intervention, and requiring natural recovery lasting between one and six months (up to one year for groundwater), where natural recovery is feasible) within the Study Area.

EASR Authorisations

- 9.4.58 From 01 November 2025, Environmental Authorisations (Scotland) Regulations 2018¹, has replaced the previous CAR Regulations².
- 9.4.59 From a data request from SEPA on 05 September 2025, it was confirmed that all the discharges within the Study Area are associated with sewage. These are displayed in Volume 3, Appendix 9.5.
- 9.4.60 Within the Study Area three groundwater abstractions were also identified by SEPA. These are displayed in Table 9-13 below. Two of the groundwater abstractions identified are outwith the recommended SEPA buffer zones (250m where subsurface excavations are deeper than 1m, 100m when subsurface excavations are less than 1m deep and 10m for all activities) outlined within 'Guidance on Assessing the Impacts of Developments on Groundwater Abstractions'⁴⁵ they have been scoped out and are not assessed further throughout this chapter. The third Abstraction (ABS-01) is within the recommended SEPA buffer zones and has been scoped in.

Table 9-13 Groundwater Abstractions (EASR Authorisations, previously 'CAR Authorisations')

ID (See Volume 2,	EASR Authorisation (previously	National Grid Reference	Activity Type	Distance to Project	Scoped In/Out
-------------------	--------------------------------	-------------------------	---------------	---------------------	---------------

⁴⁵ Scottish Environment Protection Agency (SEPA). (n.d.). *Guidance on assessing the impacts of developments on groundwater abstractions*. [online] Available at: <https://www.sepa.org.uk/media/mfzpnjwb/guidance-on-assessing-the-impacts-of-developments-on-groundwater-abstractions.docx> [Accessed 21 Nov. 2025].

Figure 9.2)	'CAR Authorisations')				
ABS-01	CAR/L/1012583	NS 76080 68030	Industrial or Commercial: Process Water	10m from XX021A	Scoped In – within 10m of works.
ABS-02	CAR/L/1011906	NS 79730 64960	Industrial or Commercial: Process Water	500m from XX036	Scoped Out - outwith SEPA recommended buffers
ABS-03	CAR/L/1011906	NS 79900 65180	Industrial or Commercial: Process Water	600m from XX035A	Scoped Out - outwith SEPA recommended buffers

Aquatic Ecology

- 9.4.61 A data request from SEPA on 05 September 2025 provided data on invertebrates, algae and macrophytes. Within the Study Area the following monitoring locations were identified as relevant to the Project: Bonny Water at Bogton at NS 84195 81315, Glencryan Burn upstream of Red Burn confluence at NS 77164 74144, Shotts Burn at Sauchenbog Bridge at NS 78177 63653, Auchter Water in Bonkle at NS 83321 56715, River Carron upstream of Little Denny Burn at NS 83175 81947, Tillan Burn at NS 79378 58361, and Cameron Burn upstream of Luggie Water Confluence at NS 77414 72459. None of these sites appear to have any protected species under the Wildlife and Countryside Act 1981⁴⁶, Nature Conservation (Scotland) Act 2004⁴⁷ and Wildlife and Natural Environment (Scotland) Act 2011⁴⁸.

Other designations

- 9.4.62 There are six protected areas within the 1km Study Area. Howierig Muir Site of Scientific Interest (SSSI), which is a raised bog, is 470m east of WB047 on the WB Route. Slamannan Plateau SSSI and Special Protection Area (SPA) runs parallel to the south of the WB Route and the CB Route, beginning 57m southwest of WB025 and ending 40m south of CB023. Woodend Loch SSSI lies 38m to the south of XX001A and XX001B. The remaining three are found at the boundaries of the Study Area and so are just under 1km away from the works: North Bellstane Plantation SSSI north of the WB Route, Bishop Loch SSSI west of the end of the XX Route and Garrion Gill SSSI southeast of the XR Route.
- 9.4.63 No Wetlands of International Importance (Ramsar) have been identified within the Study Area.

Future Baseline

- 9.4.64 It is likely that through the action of new legislative requirements and increasingly stringent planning policy and regulation, that the health of the water environment will

⁴⁶ Wildlife and Countryside Act 1981, c. 69. Available at: <https://www.legislation.gov.uk/ukpga/1981/69/contents> [Accessed: 20 Nov. 2025]

⁴⁷ Nature Conservation (Scotland) Act 2004, asp 6. Available at: <https://www.legislation.gov.uk/asp/2004/6/contents> [Accessed: 20 Nov. 2025]

⁴⁸ Wildlife and Natural Environment (Scotland) Act 2011, asp 6. Available at: <https://www.legislation.gov.uk/asp/2011/6/contents> [Accessed: 20 Nov. 2025]

continue to improve. The Environment Act 2021⁴⁹ and the Levelling-Up and Regeneration Act 2023⁵⁰ both apply in part to Scotland and include measures to tackle storm sewage discharges and set new requirements relating to nutrient (nitrogen and phosphorous) pollution standards, respectively. There are, however, significant challenges such as adapting to a changing climate and pressures of population growth that could have a retarding impact. It is also difficult to forecast these changes with any certainty.

- 9.4.65 The current receptor importance criteria presented in Table 9-6 are largely based on the presence or absence of various attributes (e.g. designated nature conservation site or WFD designation) and flow (i.e. the size of the watercourse). The application of these criteria is therefore not sensitive to more subtle changes or improvements in water quality as may be experienced over time. Thus, no significant changes to current baseline conditions are predicted for the future baseline in the absence of the Project, as the principal reasons for differences in water body importance are unlikely to change. For this reason, the impact assessment within this chapter is undertaken against existing baseline conditions.

Importance of Surface Water and Groundwater Features

- 9.4.66 Table 9-14 displays the importance value for each of the water feature receptors.

⁴⁹ Environment Act 2021. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents> [Accessed: 20 Nov. 2025]

⁵⁰ Levelling-Up and Regeneration Act 2023. Available at: <https://www.legislation.gov.uk/ukpga/2023/55> [Accessed: 01 May 2026]

Table 9-14 Importance of Water Features

Water Feature	Water Quality Importance	Hydromorphological Importance	Assessments to be considered within
Scottish Coal Measures	High classification as supports surface water bodies, GWDTEs and is within a Groundwater drinking protected area. Moderately productive aquifer. Includes the following WFD Bodies: • Falkirk; • Slamannan; and • Glasgow and Motherwell.	N/A	WB Route, Uprated Overhead Line, CB Route Removal, AA Route Partial Undergrounding, Bonnybridge Substation Extension, Wishaw Substation Extension and Distribution Live Diversion Works
Clackmannan Aquifer Group	High classification as supports surface water bodies, GWDTEs and is within a Groundwater Drinking Water Protected Area. Moderately productive aquifer. Includes the following WFD Bodies: • Castlecary; • Kirkintilloch; • Glenboig; • Denny; • Whitburn; and • Steps.	N/A	WB Route, Uprated Overhead Line, CB Route Removal, AA Route Partial Undergrounding, Denny North Substation Works and Distribution Line Diversion Works
Superficial Aquifers	Medium – dispersed aquifer localised to areas of high permeability such as alluvium. It may support GWDTE where deposits with higher permeability are present. Included in the Carron Sand and Gravel WFD Body.	N/A	WB Route, Uprated Overhead Line, CB Route Removal, AA Route Partial Undergrounding, Denny North Substation Works, Bonnybridge Substation Extension, Wishaw Substation Extension and Distribution Live Diversion

ABS-01 (CAR/L/1012583)	Low – processed water for industrial purposes. Not required for drinking.	N/A	WB Route
Bonny Water / Red Burn	High – water feature has a WFD classification shown in a RBMP. Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	WB Route, CB Route Removal, AA Route Partial Undergrounding, Bonnybridge Substation Extension, Cumbernauld Substation Extension and Distribution Line Diversion Works
BW-1	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Medium – riffle dominated watercourse with some modification / straightening in the upper sections.	WB Route, CB Route Removal, AA Route Partial Undergrounding and Bonnybridge Substation Extension
BW-2	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	WB Route
BW-3	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Bonnybridge Substation Extension; WB Route; Upgraded Overhead Line (ZG Route).
BW-4	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	CB Route Removal and AA Route Partial Undergrounding
BW-6	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	WB Route, CB Route Removal, AA Route Partial Undergrounding and Distribution Line Diversion Works
BW-7	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – small, relatively unmodified watercourse	CB Route Removal

BW-8	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – small, relatively unmodified watercourse	CB Route Removal
BW-9	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	WB Route and Distribution Line Diversion Works
BW-10	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	WB Route and CB Route Removal
BW-11	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	WB Route and CB Route Removal
BW-12	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	CB Route Removal and Distribution Line Diversion Works
BW-13	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	CB Route Removal
BW-14	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	CB Route Removal and Distribution Line Diversion Works
BW-15	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Distribution Line Diversion Works

BW-16	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	WB Route and Cumbernauld Substation Extension
BW-17	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	CB Route Removal
BW-18	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	CB Route Removal
BW-20	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	WB Route
BW-22	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	WB Route
BW-24	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	WB Route and Distribution Line Diversion Works
BW-26	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Distribution Line Diversion Works
BW-27	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Medium - riffle dominated watercourse, relatively unmodified.	Distribution Line Diversion Works
BW-35	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Cumbernauld Substation Extension

Forth and Clyde Canal	High – water feature has a WFD classification shown in a RBMP; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	WB Route, CB Route Removal, AA Route Partial Undergrounding and Distribution Line Diversion Works
Luggie Water	High – water feature has a WFD classification shown in a RBMP; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	WB Route
LW-1	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Medium - riffle dominated watercourse, relatively unmodified.	WB Route
LW-4	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	WB Route and Distribution Line Diversion Works
LW-6	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	WB Route
LW-7	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Medium - riffle dominated watercourse, relatively unmodified.	WB Route
LW-8	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	WB Route
LW-10	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	WB Route
LW-13	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Medium- Low gradient passively meandering, relatively unmodified.	WB Route

LW-14	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	WB Route
LW-15	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	WB Route and Distribution Line Diversion Works
LW-16	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	WB Route
LW-18	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	WB Route
Auchter Water	High – water feature has a WFD classification shown in a RBMP; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Medium - Low gradient passively meandering, Boulders, cobbles.	Upgraded Overhead Line (XR Route) and Distribution Line Diversion Works
AW-2	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upgraded Overhead Line (XR Route)
AW-7	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upgraded Overhead Line (XR Route)
AW-8	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upgraded Overhead Line (XR Route)
AW-9	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upgraded Overhead Line (XR Route)

AW-10	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upgraded Overhead Line (XR Route)
South Calder Water	High – water feature has a WFD classification shown in a RBMP; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upgraded Overhead Line (XR Route)
SCW-1	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upgraded Overhead Line (XR Route)
SCW-2	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upgraded Overhead Line (XR Route)
SCW-3	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upgraded Overhead Line (XR Route)
SCW-4	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upgraded Overhead Line (XR Route)
SCW-5	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upgraded Overhead Line (XR Route) and Distribution Line Diversion Works
SCW-6	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upgraded Overhead Line (XR Route)
SCW-7	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial	Upgraded Overhead Line (XR Route)

		cross-section, channelised or realigned	
Catchment 13-1	Medium – water feature does not have a WFD classification; Q95 between 1.0m³/s and 0.001m³/s.	Medium – small meandering watercourse. Relatively unmodified watercourse	Uprated Overhead Line (XR Route)
Catchment 13-2	Medium – water feature does not have a WFD classification; Q95 between 1.0m³/s and 0.001m³/s.	N/A – no direct works water feature or within recommended buffer zones	Uprated Overhead Line (XR Route)
Tillan Burn	High – water feature has a WFD classification shown in a RBMP; Q95 between 1.0m³/s and 0.001m³/s.	Medium - Low gradient passively meandering, Boulders, cobbles	Uprated Overhead Line (XR Route)
TB-1	Medium – water feature does not have a WFD classification; Q95 between 1.0m³/s and 0.001m³/s.	N/A – no direct works water feature or within recommended buffer zones	Uprated Overhead Line (XR Route)
TB-2	Medium – water feature does not have a WFD classification; Q95 between 1.0m³/s and 0.001m³/s.	N/A – no direct works water feature or within recommended buffer zones	Uprated Overhead Line (XR Route)
TB-4	Medium – water feature does not have a WFD classification; Q95 between 1.0m³/s and 0.001m³/s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Uprated Overhead Line (XR Route) and Distribution Line Diversion Works
Shirrel Burn / Thankerton Burn / Legbrannock Burn	High – water feature has a WFD classification shown in a RBMP; Q95 between 1.0m³/s and 0.001m³/s.	N/A – no direct works water feature or within recommended buffer zones	Uprated Overhead Line (XR Route)
ShirrelB-5	Medium – water feature does not have a WFD classification; Q95 between 1.0m³/s and 0.001m³/s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Uprated Overhead Line (XR Route)

ShirrelB-6	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Uprated Overhead Line (XX Route)
North Calder Water	High – water feature has a WFD classification shown in a RBMP; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Medium- Low gradient passively meandering with cobbles and boulders and retains some natural features.	Uprated Overhead Line (XX Route)
NCW1-3	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Medium- Low gradient passively meandering with cobbles and boulders and retains some natural features.	Uprated Overhead Line (XX Route)
NCW1-4	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Uprated Overhead Line (XX Route)
NCW1-5	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Uprated Overhead Line (XX Route)
Catchment 9-2	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Uprated Overhead Line (XX Route)
Catchment 9-3	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Uprated Overhead Line (XX Route)
Shotts Burn	High – water feature has a WFD classification shown in a RBMP; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Uprated Overhead Line (XX Route)

ShottsB-3	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Medium – previous alteration and modification but retains some natural features. Some natural fluvial processes may occur, but anthropogenic influences have an obvious impact.	Upated Overhead Line (XX Route) and Distribution Line Diversion Works
South Burn	High – water feature has a WFD classification shown in a RBMP ; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upated Overhead Line (XX Route)
SB-3	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upated Overhead Line (XX Route) and Distribution Line Diversion Works
SB-5	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upated Overhead Line (XX Route)
SB-6	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upated Overhead Line (XX Route)
SB-7	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upated Overhead Line (XX Route)
SB-8	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upated Overhead Line (XX Route)
SB-9	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upated Overhead Line (XX Route)

SB-10	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upated Overhead Line (XX Route) and Distribution Line Diversion Works
SB-12	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upated Overhead Line (XX Route) and Distribution Line Diversion Works
SB-13	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upated Overhead Line (XX Route)
SB-15	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upated Overhead Line (XX Route)
SB-16	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upated Overhead Line (XX Route)
Catchment 19-1	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upated Overhead Line (XX Route) and Distribution Line Diversion Works
Catchment 19-2	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upated Overhead Line (XX Route) and Distribution Line Diversion Works
Catchment 19-3	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Distribution Line Diversion Works
Catchment 19-7	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upated Overhead Line (XX Route)

Catchment 19-8	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Uprated Overhead Line (XX Route)
Catchment 19-9	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Uprated Overhead Line (XX Route)
Pow Burn / Tor Burn	High – water feature has a WFD classification shown in a RBMP; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Uprated Overhead Line (ZG Route) and Denny North Substation Works
PB-4	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Denny North Substation Works
PB-5	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Uprated Overhead Line (ZG Route)
PB-6	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Uprated Overhead Line (ZG Route)
River Carron	High – water feature has a WFD classification shown in a RBMP; Q95 between 1.0m ³ /s and 0.001m ³ /s.	High – conforms to natural unaltered state with diverse geomorphic forms and processes. Some modifications.	Uprated Overhead Line (ZG Route)
RC1-1	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Uprated Overhead Line (ZG Route) and Denny North Substation Works

RC1-2	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upated Overhead Line (ZG Route) and Denny North Substation Works
RC1-5	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upated Overhead Line (ZG Route)
RC1-6	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upated Overhead Line (ZG Route)
RC2-1	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upated Overhead Line (ZG Route)
RC2-2	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upated Overhead Line (ZG Route)
RC2-4	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upated Overhead Line (ZG Route) and Distribution Line Diversion Works
RC2-5	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upated Overhead Line (ZG Route)
RC2-6	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Upated Overhead Line (ZG Route)
RC2-7	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.001m ³ /s.	Low – substantially modified, likely artificial	Distribution Line Diversion Works

		cross-section, channelised or realigned	
River Clyde	Very High – water feature has a WFD classification shown in a RBMP; Q95 > 1.0m ³ /s	N/A – no direct works water feature or within recommended buffer zones	Upgraded Overhead Line (XR Route)
Catchment 17-1	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.0001m ³ /s.	N/A – no direct works water feature or within recommended buffer zones	Wishaw Substation Extension
Catchment 17-2	Medium – water feature does not have a WFD classification; Q95 between 1.0m ³ /s and 0.0001m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned	Upgraded Overhead Line (XR Route) and Wishaw Substation Extension

Importance of Flood Risk Receptors

- 9.4.67 Flood risk receptors have been identified as developments or features that could be affected by changes in flood risk as a result of the Project. All receptors within 1km downstream of the Site have been considered and are listed by their source in Table 9-15.

Table 9-15 Flood Risk Receptors and their Importance

Development Site	Receptor	Features	Flood Risk Source	Importance
Proposed Denny North Substation Works	Langlands Farm NS 82424 85164 Doghillock Farm NS 82082 83898	Health and wellbeing implications of flooding, and financial cost.	Surface water / small watercourse	Medium
	Minor local roads	Travel disruption	Surface water / small watercourse	Low
	Unnamed watercourse (tributary to River Carron)	Increased flooding from watercourse	Small watercourse	Low
Bonnybridge Substation Extension	Road infrastructure	Travel disruption	Fluvial	High
	Recycling centre and WWTW	Service disruption	Fluvial	High
	Residential and commercial properties within 1km	Health and wellbeing implications of flooding, and financial cost.	Fluvial	Medium
Wishaw Substation Extension	Road and rail infrastructure	Travel disruption	Surface Water	High
Wishaw Substation Extension	Residential and commercial properties within 1km	Health and wellbeing implications of flooding, and financial cost.	Surface Water	Medium

9.5 Embedded Mitigation

Temporary Access Drainage

- 9.5.1 Where possible, existing non-public roads and tracks would be utilised to minimise the need for constructing temporary trackways, thereby reducing potential impacts on the water environment. However, upgrades to these existing routes may be required and would be assessed on a case-by-case basis at the detailed design stage.
- 9.5.2 In areas where no existing roads or tracks are available for the construction of the new overhead lines, new stone tracks would be constructed. These tracks would be cut into the ground surface, with vegetation removed during excavation retained and reinstated following track removal after construction. The tracks would be formed using compacted granular material, which is expected to result in low permeability due to compaction from construction traffic. For the uprating and works on substations, temporary trackways shall be used where required.
- 9.5.3 Runoff from the temporary trackways surface would be intercepted by channel drains along the road edges. These drains would direct runoff into temporary attenuation basins, where it would undergo treatment prior to controlled release.

Watercourse Crossings

- 9.5.4 Where possible, the works associated with the Project would utilise existing crossings. Excluding existing crossings, the Project may require up to 16 new watercourse crossings comprising either temporary culverts or clear span bridges. However, as the exact locations of the temporary bridge installations are not yet confirmed, the assessment has assumed the use of culverts as a worst-case scenario for environmental impact purposes.
- 9.5.5 Where culverting of watercourses or ditches is required, the design would maintain existing hydrological connectivity, conveyance capacity (where applicable), and appropriate freeboard. The temporary culverts and clear-span bridges would be installed to enable the construction of temporary trackways, although the duration may vary depending on construction progress.
- 9.5.6 Culverts would be installed by the laying of a geotextile membrane onto the watercourse bed and banks, with a 150mm bedding layer of compacted crushed stone or granular fill laid on top, followed by a twin wall pipe to the requisite diameter as per the specific culvert design. Granular fill would then be installed around and over the pipe to the requisite depth to provide the minimum cover over the pipe (900mm as per standard detail).
- 9.5.7 It is possible that the watercourse may need to be temporarily damned depending on the level of water and flow rate. This would be determined based on each individual watercourse, and the specific design and method produced for each culvert. The construction of watercourse crossings would take place during drier periods of the year or where flows in the watercourse are low due to a period of dry weather where possible. If this is not possible flow would be over pumped during the installation works to keep the works area dry and reduce pollution risks.

- 9.5.8 Upon completion of the construction phase, all temporary crossings would be removed and affected riverbed and adjacent banks would be fully reinstated to their original condition, ensuring minimal long-term impact on the water environment.
- 9.5.9 The culverting of watercourses is a controlled activity under EASR (formerly CAR) and requires authorisation from SEPA, as stated in Environmental Authorisations (Scotland) Regulations 2018⁵¹: Proposed types of authorisations for waste management, water and industrial activities. It is proposed that bottomless culverts or single spanning bridges would be used for new crossings, to minimise the impact of the temporary trackway. The temporary trackways crossings are assumed culverts up to 10m long at this stage and are assumed to be bottomless, to preserve the natural riverbed, or box type with natural substrate within the base of the culvert and would be assessed as a reasonable worst-case scenario.

Riparian Buffer Zones

- 9.5.10 Riparian riverbank corridors are key components of nature networks and blue-green infrastructure, supporting biodiversity, water quality, and ecological connectivity. SEPA provides guidance on recommended buffer widths for riparian corridors based on channel size⁵²:
- For watercourses with a channel width of 2m or less a 10m buffer is recommended;
 - For channels between 2m and 15m wide the recommended buffer is 15m;
 - For channels 15m wide or greater a 30m buffer should be maintained; and
 - Where excavations exceed 1m in depth the recommended buffer increases to 50m, regardless of channel width, to mitigate the risk of disturbance to the water environment and surrounding habitats.
- 9.5.11 Volume 3, Appendix 9.1 lists the distances between the Project and surface water features. Table 9-16 lists each of the components of the Project that are located within the recommended buffer zones, which can be viewed in Volume 2, Figure 9.4.
- 9.5.12 The mitigation measures required for each of these components depend on the type of works, as described below:
- Watercourse crossings – mitigation measures to reduce the risk of impact to watercourses are outlined within ‘Watercourse Crossings’. To reduce pollution to the water features, all standard mitigation measures outlined within Section 0 would be implemented. Where required additional mitigation measures such as reinstatement of watercourses would also be implemented when applicable;
 - Foundation works – mitigation measures include all standard mitigation measures outlined within Section 0 and details outlined within ‘Foundation Installation and

⁵¹ Scottish Environment Protection Agency (SEPA) (2024) Environmental Authorisations (Scotland) Regulations 2018: Proposed types of authorisations for waste management, water and industrial activities. Available at: https://consultation.sepa.org.uk/regulatory-services/better-regulation-consultation-types-of-authorisation/supporting_documents/240208_Consultation_EASR2018_Types_of_authorisation.pdf (Accessed: 28 May 2026).

⁵² Scottish Environment Protection Agency (SEPA) (2024) *Recommended Riparian Corridor Note*. Available at: <https://www.sepa.org.uk/media/puqhuwhn/recommended-riparian-corridor-note.docx> [Accessed: 20 Nov. 2025]

Improvement Works'. Where required, additional mitigation measures such as Reinstatement of Watercourses would also be implemented when applicable; and

- Underground cabling - mitigation measures for underground cables are described within 'Underground Cable Route'. Where required, additional mitigation measures such as Reinstatement of Watercourses would also be implemented when applicable.

Table 9-16 Components of the Project Located within Recommended Riparian Buffer Zones

IDs	Proposed Works	Justification	Width / Buffer (m)	Distance to Works (m)
WB Route				
BW-2	WB056 – steel tower foundation works	Integral part of the design	1.1 / 50	40
BW-3	WB059 – foundation works	Integral part of the design	1.9 / 50	27
BW-6	Temporary trackways new crossing Cr5 and Cr6	Temporary trackways crossings, access required for steel tower locations	0.9 / 10	0
BW-9	Temporary trackways new crossing Cr7	Temporary trackways crossings, access required for steel tower locations	1.3 / 10	0
BW-10	Temporary trackways new crossing Cr8	Temporary trackways crossings, access required for steel tower locations	0.7 / 10	0
BW-10	WB040– steel tower foundation works	Integral part of the design	0.7 / 50	1
BW-11	One temporary trackways new crossings Cr13 and two existing crossings listed as Cr10 Cr11	Temporary trackways crossings, access required for steel tower locations	0.6 / 10	0
BW-12	Temporary trackways new crossing Cr14	Temporary trackways crossings, access required for steel tower locations	0.8 / 10	0

BW-13	WB028 – steel tower foundation works	Integral part of the design	0.4 / 50	30
BW-14	WB023 – steel tower foundation works	Integral part of the design	0.5 / 50	5
BW-17	WB021A – steel tower foundation works	Integral part of the design	0.6 / 50	12
BW-22	WB038 – steel tower foundation works	Integral part of the design	210 / 50	45
BW-24	WB039 – steel tower foundation works	Integral part of the design	15.3 to 26.4 / 50	45
Forth and Clyde Canal	Existing crossing used for access Cr4	Existing crossing, only use for access	16 / 30	0
LW-1	WB002 – steel tower foundation works	Integral part of the design	2.7 / 50	40
LW-4	Temporary trackways new crossing Cr18	Temporary trackways crossings, access required for steel tower locations	0.7 / 10	0
LW-6	WB005 – steel tower foundation works	Integral part of the design	0.7 / 50	30
LW-7	Existing crossing used for access Cr17	Existing crossing, only use for access	1.7 / 10	0
LW-10	WB010 – steel tower foundation works	Integral part of the design	0.9 / 50	20
LW-13	Temporary trackways new crossing Cr16	Temporary trackways crossings, access required for steel tower locations	1.3 / 10	0
LW-15	WB013 – steel tower foundation works	Integral part of the design	1 / 50	20
LW-16	WB014 – steel tower	Integral part of the design	0.5 / 50	24

foundation works						
RC2-4		WB052 – steel tower foundation works		Integral part of the design	0.6 / 50	15
Uprated Overhead Line						
Auchter Water		Existing crossing used for access Cr24		Temporary trackways crossings, access required for steel tower locations	4 / 15	0
AW-8	XR028 – steel tower foundation works	Existing steel tower location	1.5 / 50			50
AW-9		Temporary trackways new crossing Cr23		Temporary trackways crossings, access required for steel tower locations	2.6 / 15	0
SCW-1	XR025 – steel tower foundation works	Existing steel tower location	0.6 / 50			10
SCW-4		XR022 – steel tower foundation works		Existing steel tower location	1.1 / 50	14
SCW-5	XR021 – steel tower foundation works	Existing steel tower location	1.2 / 50			5
SCW-6		XR018 – steel tower foundation works		Existing steel tower location	1 / 50	50
SCW-7	XR022 – steel tower foundation works	Existing steel tower location	0.8 / 50			5
Catchment 13-1		XR015 – steel tower foundation works		Existing steel tower location	1.2 / 50	10
Tillan Burn	Temporary trackways new crossing Cr22	Temporary trackways crossings, access required for steel tower locations	4 / 15			0
TB-4		XR009 – steel tower foundation works		Existing steel tower location	15.6 / 50	15

ShirrelB-5	XR002 – steel tower foundation works	Existing steel tower location	1.5 / 10		45
ShirrelB-6		XX048 – steel tower foundation works	Existing steel tower location	1.7 / 50	30
North Calder Water	Existing crossing used for access Cr19	Temporary trackways crossings, access required for steel tower locations	10 / 15		0
NCW1-3		XX035A – steel tower foundation works	Existing steel tower location	0.8 / 50	50
NCW1-4	XX034A – steel tower foundation works	Existing steel tower location	0.7 / 50		15
NCW1-5		XX032 – steel tower foundation works	Existing steel tower location	0.6 / 50	45
Catchment 9-3	XX046 – steel tower foundation works	Existing steel tower location	0.5 / 50		10
ShottsB-3		XX039 – steel tower foundation works	Existing steel tower location	1.2 / 50	50
SB-5	XX024 – steel tower foundation works	Existing steel tower location	0.7 / 50		30
SB-8		XX019 – steel tower foundation works	Existing steel tower location	0.3 / 50	30
SB-10	Temporary trackways new crossing Cr20	Temporary trackways crossings, access required for steel tower locations	1.6 / 10		0
SB-13		XX015 – steel tower foundation works	Existing steel tower location	51 (at widest point) / 50	25
SB-15	XX025 – steel tower foundation works	Existing steel tower location	1.9 / 50		35

SB-16		XX023 – steel tower foundation works	Existing steel tower location	0.9 / 50	50
Catchment 19-2	XX004 – steel tower foundation works	Existing steel tower location	71 (at widest point) / 50		50
Catchment 19-7	XX001A – steel tower foundation works	Existing steel tower location		670 (at widest point) / 50	50
Catchment 19-8	XX003 – steel tower foundation works	Existing steel tower location	90 (at widest point) / 50		45
Catchment 19-9	XX003 – steel tower foundation works	Existing steel tower location	0.9 / 50		40
PB-5	Existing crossing used for access Cr2	Temporary trackways crossings, access required for steel tower locations	1 / 10		0
River Carron	ZG011 – steel tower foundation works	Existing steel tower location	28 / 50		15
RC1-2	Temporary trackways new crossing Cr1	Temporary trackways crossings, access required for steel tower locations	0.9 / 10		0
RC1-6	ZG007 – steel tower foundation works	Existing steel tower location	1.3 / 50		20
RC2-1	Existing crossing used for access Cr3	Temporary trackways crossings, access required for steel tower locations	1 / 50		0
RC2-2	ZG008 – steel tower foundation works	Existing steel tower location	0.7 / 50		25
Catchment 17-2	XR046 – steel tower foundation works	Existing steel tower location	1 / 50		30
BW-3	WB059 – steel tower foundation works	Existing steel tower location	1.9 / 50		27
CB Route Removal					

BW-1		Temporary watercourse crossing Cr9	Temporary trackways crossings, access required for steel tower locations	2 / 10	0
BW-7	CB028 – steel tower foundation works	Existing steel tower location	1.3 / 50		35
BW-8		CB026 – steel tower foundation works	Existing steel tower location	1 / 50	50
BW-10	CB022 – steel tower foundation works	Existing steel tower location	0.7 / 50		22
BW-11		Temporary watercourse crossing Cr12.	Temporary trackways crossings, access required for steel tower locations	0.6 / 10	0
BW-13	CB011 – steel tower foundation works	Existing steel tower location	0.4 / 50		5
Forth and Clyde Canal		CB037 – steel tower foundation works	Existing steel tower location	16 / 50	25
AA Route Partial Undergrounding					
BW-1		Crossed by AA – excavation works	Watercourse crossing by AA Route	2 / 50	0
BW-6	Crossed by AA – excavation works	Watercourse crossing by AA Route	0.9 / 50		0
Cumbernauld Substation Extension					
BW-16	Footprint of substation overlaps channel	Integral part of the design	0.5 / 10		0
Distribution Line Diversion Works					
Bonny Water	Line Diversion Works	Temporary, will be reinstated afterwards	10 / 50		47

Forth and Clyde Canal	Line Diversion Works	Temporary, will be reinstated afterwards	16 / 50	0
RC2-4	Line Diversion Works	Temporary, will be reinstated afterwards	0.6 / 50	40
RC2-7	Line Diversion Works	Temporary, will be reinstated afterwards	1 / 50	0
BW-6	Line Diversion Works	Temporary, will be reinstated afterwards	0.9 / 50	25
BW-9	Line Diversion Works	Temporary, will be reinstated afterwards	1.3 / 50	0
BW-12	Line Diversion Works	Temporary, will be reinstated afterwards	0.8 / 50	18
BW-14	Line Diversion Works	Temporary, will be reinstated afterwards	0.5 / 50	0
BW-15	Line Diversion Works	Temporary, will be reinstated afterwards	0.6 / 50	6
BW-24	Line Diversion Works	Temporary, will be reinstated afterwards	15.3 to 26.4 / 50	8
BW-26	Line Diversion Works	Temporary, will be reinstated afterwards	0.3 / 50	18
BW-27	Line Diversion Works	Temporary, will be reinstated afterwards	2 / 50	0
LW-4	Line Diversion Works	Temporary, will be reinstated afterwards	0.7 / 50	0
LW-15	Line Diversion Works	Temporary, will be reinstated afterwards	1 / 50	38
Catchment 19-1	Line Diversion Works	Temporary, will be reinstated afterwards	230 / 50	6
Catchment 19-2	Line Diversion Works	Temporary, will be reinstated afterwards	71 / 50	11

Catchment 19-3	Line Diversion Works	Temporary, will be reinstated afterwards	74 / 50		31
SB-3		Line Diversion Works	Temporary, will be reinstated afterwards	0.9 / 50	44
SB-10	Line Diversion Works	Temporary, will be reinstated afterwards	1.6 / 50		5
SB-12		Line Diversion Works	Temporary, will be reinstated afterwards	2.1 / 50	0
ShottsB-3	Line Diversion Works	Temporary, will be reinstated afterwards	1.2 / 50		46
TB-4		Line Diversion Works	Temporary, will be reinstated afterwards	15.6 / 50	5
SCW-5	Line Diversion Works	Temporary, will be reinstated afterwards	1.2 / 50		49.5
Auchter Water		Line Diversion Works	Temporary, will be reinstated afterwards	4 / 50	0

Foundation Installation and Improvement Works

- 9.5.13 The WB Route would require the installation of 62 new steel towers, each of which would require dedicated foundations. New foundations would consist of a raft foundation with a neck extension for each of the four lattice tower legs. GI works and ground conditions would inform the design as to whether a piled or rock anchor solution will be selected.
- 9.5.14 Foundation areas would typically be excavated to a depth of 4m, with temporary shoring installed to ensure stability and safety during construction. The typical foundation footprint is expected to be 4m x 4m x 0.5m. During excavation, groundwater ingress may occur. If encountered, it would be appropriately managed in accordance with the measures outlined within the project's Water Management Plan (WMP), to prevent contamination or uncontrolled discharge to the surrounding environment.
- 9.5.15 De-watering from any excavations would be treated using a combination of settlement tanks, silt fencing, silt socks, and silt busters, as appropriate. All abstracted water would be treated before being discharged to the wider water environment. These measures would be implemented in conjunction with a site-specific pollution prevention plan, developed to ensure compliance with relevant environmental regulations and best practice standards. The appropriate secondary consents would be acquired before abstraction and discharge to the water environment.
- 9.5.16 For the Up-rated Overhead Lines, there would be a requirement for some foundation improvement works. The steel towers which would require this are not yet confirmed. Therefore, a worst-case scenario has been selected in which all the steel towers would

require some sort of upgrades. It has been assumed that the methodology and mitigation would be similar to the foundation installations for the WB Route.

Underground Cable Route

- 9.5.17 The AA Route is currently a double circuit overhead line, and therefore two trenches would be required for the underground cable which would run approximately 5m parallel to the other, the longest of which being 700m in length. The trenches are expected to reach a depth of 1.5m and are also expected to be 1.5m in width. Cable ducts would be installed within the trench and would be surrounded by a material (usually concrete, sand or cement bound sand) to cover the ducts. Sections would be backfilled with excavated material.
- 9.5.18 Groundwater could be encountered. To mitigate this, it is recommended that cables be encapsulated within plastic ducts and as such would be designed to be watertight.
- 9.5.19 Where possible intrusive watercourse crossings would be carried out during drier periods of the year or during a period of dry weather where flows in the watercourse are low (this may be baseflow or where the channels are very small and not as well connected to groundwater and potentially dry). However, this cannot be guaranteed and so any water flow within the watercourse would need to be over-pumped / flumed through the works area to maintain a dry trench and to reduce pollution risks.
- 9.5.20 Runoff from excavations could mobilise sediment and transport it downstream. To reduce the impact of this, excavated areas would be limited to areas where work would currently be taking place to reduce the amount of sediment mobilised at one time.

Surface Water Management

Proposed Denny North Substation Works

- 9.5.21 At Denny North substation, surface water from the platform extension would be managed using a filter drain located beneath the platform. The existing swale would be re-aligned and integrated into this filter drain system, discharging at the existing culvert beneath the access road from the east.
- 9.5.22 The drainage connection to the smaller platform to the east would be assessed and, if necessary, replaced to ensure effective conveyance.
- 9.5.23 All surface water would ultimately flow southwards through the existing swale and attenuation basin, discharging into the River Carron. The system is designed to provide water quality treatment through filtration and sedimentation within the filter drains and basin, helping to remove suspended solids and potential pollutants prior to discharge. The filter drains also add attenuation volume to the Project, helping to capture surface water runoff and reduce pluvial flood risk.
- 9.5.24 See Volume 3, Appendix 9.4 for further detail on the Surface Water Management Strategy.

Bonnybridge Substation Extension

- 9.5.25 At Bonnybridge, the new platform would be drained via perforated pipes connected to a peripheral filter drain network. This network would convey surface water to a new sustainable drainage systems (SuDS) Pond located to the north of the Site, which is

designed to provide water quality treatment through filtration, helping to remove suspended solids and potential pollutants.

9.5.26 The SuDS Pond would provide attenuation volume for the Project, and discharge via a controlled Hydrobrake outflow equivalent to 3.2 litres per second per hectare (l/s/ha) to a small watercourse (BW-3) that connects the Bonny Water to the Rowan Tree Burn (BW-1), ensuring regulated release and minimising downstream impacts on flow. This flow control follows Falkirk Council policy, and would likely improve on downstream baseline flood risk as it is lower than the pre-development runoff rate from the site.

9.5.27 See Volume 3, Appendix 9.4 for further detail on the Surface Water Management Strategy.

Wishaw Substation Extension

9.5.28 At Wishaw, the platform extension would be served by a peripheral filter drain system. This filter drain transitions into a swale along the southern boundary of the Site before reverting to a filter drain, which connects to the existing drainage network at Manhole 7.

9.5.29 Collected surface water would ultimately discharge to Catchment 17-2 (Gowkthrapple Burn), a tributary of Catchment 17-1 (Hall Gill). The swale and filter drain system are designed according to SuDS standards to provide treatment of runoff to remove suspended solids and improve water quality prior to discharge. The system is also sized to attenuate runoff up to a 0.5%AEP event with allowance for climate change, prior to entering the existing drainage system. This will reduce pluvial flood risk both on site and off site.

9.5.30 See Volume 3, Appendix 9.4 for further detail on the Surface Water Management Strategy.

Cumbernauld Substation Extension

9.5.31 A breach of the recommended buffer zone occurs at water feature BW-16, where the Project footprint overlaps the existing channel. The water feature does not appear on 1:50k OS mapping and is likely an artificial drainage ditch, indicated by straight alignment, uniform profile and partially piped sections.

9.5.32 To manage downstream flow, a cut-off ditch will be installed at the crest of the cutting to intercept BW-16 and redirect its flow. This measure is essential to prevent overland flow from higher ground from entering the substation drainage system, which could otherwise increase flood risk to critical infrastructure.

9.5.33 Due to site elevation requirements and excavation depth, complete avoidance of the watercourse is not feasible. However, during detailed design and following ground investigation, opportunities to steepen earthwork slopes will be explored to minimise diversion length.

9.5.34 SEPA has confirmed that authorisation will not be required for this diversion.

9.5.35 See Volume 3, Appendix 9.4 for further detail on the Surface Water Management Strategy.

9.6 Standard Mitigation

9.6.1 This section describes standard mitigation that is commonplace, and which is expected to be included as 'standard' on any large infrastructure project in Scotland. Standard mitigation is therefore considered in the initial determination of effects alongside

mitigation embedded in the design. This section is primarily concerned by managing the pollution risks to the water environment during construction works. Although considered standard, these measures would still need to be secured through the adoption of suitable planning conditions.

- 9.6.2 There are many ways in which construction pollution risks to the water environment can be dealt with and the following does not specify the absolute approach that any contractor should undertake, but rather sets out the principles of the mitigation required, minimum expectations, and provides details of a range of measures that can be implemented to have the desired reduction in pollution risk. During construction, the contractor would need to maintain but also adapt measures to manage pollution risks in response to changing weather conditions or tasks on site. Thus, it is important to retain this flexibility.

Construction Environmental Management Plan and Water Management Plan

- 9.6.3 All works on Site are to be undertaken in accordance with a Construction Environmental Management Plan (CEMP) for the Project, which shall be developed in the detailed design phase and refined for the consented project in advance construction, and then as necessary as construction progresses. It is assumed that both the CEMP and WMP would be secured through the application of pre-commencement planning conditions on any successful planning application.
- 9.6.4 Supporting the CEMP would be a WMP that provides greater detail with regards to the measures required to avoid, reduce and minimise adverse impacts on the water environment during construction. Like the CEMP, the WMP would be developed post consent and alongside detailed design and when the contractor(s) have been appointed. The WMP would also set out the scope of proposed water quality, flow and level monitoring of water features that are proposed, covering pre-construction, during construction, and post-construction phases. As monitoring is not a standard mitigation measure a broad scope has been included in Additional Mitigation Measures.

Mitigation measures would accord with legal compliance and be in keeping with good practice. Measures relevant to this assessment include those that:

- Control and minimise the risk of pollution to surface waters and groundwater by managing construction site runoff and the risk of chemical spillages;
 - Control the storage, handling and disposal of potentially polluting substances during construction;
 - Manage water removed from excavations to protect nearby water features from any pollution risk but also to support flows if there is a risk of reductions to baseflow;
 - If necessary, provide compensatory discharges to surface water features or GWDTEs that are groundwater fed to minimise impacts on the water level and flows to these receptors and any third-party users; and
 - Avoid and minimise the risk of damage to physical form and processes of water features.
- 9.6.5 A summary of the key measures that may need to be implemented by the contractor(s) to manage the risk of pollution or physical damage to the water environment during

construction works is summarised in the following sections. This includes a summary of what secondary consents may be required and good practice guidance.

Secondary Consents

9.6.6 All activities with potential to impact on the water environment may require permission from SEPA under the Environmental Authorisation (Scotland) Regulations 2018¹² (EASR Authorisation). This may include works that temporarily impound watercourses, watercourse crossings, dewatering, storage of oil, construction of outfalls and the regulation of any discharges of site runoff. The level of authorisation required is dependent on the anticipated environmental risk posed by the activity to be carried out. Liaison with SEPA's operations team would be undertaken post-planning permission to confirm what activities require a EASR Authorisation. There are four levels of EASR authorisation:

- General Binding Rules (GBR) - a set of mandatory rules which cover specific low risk activities, no application is required to be made to SEPA;
- Notification - apply to low-risk activities where SEPA only require awareness of what is being done and by whom. No decision is needed on granting or refusing authorisation, and the activity is deemed authorised immediately upon notification.
- EASR Registration - allows for small-scale activities that individually pose low environmental risk but, cumulatively, can result in greater environmental risk; and
- EASR Permit – are for higher risk and non-standard activities that need a rigorous assessment. They allow for site-specific conditions to be set to protect the water environment from activities that pose a higher risk.

Good Practice Guidance

9.6.7 The contractor(s) would undertake all works in accordance with good practice methods and measures as set out in this chapter. The 'Guidance for Pollution Prevention' (GPP) series provides good practice advice in Scotland for how to manage the risk from pollution risks during construction works. The following GPPs are relevant:

- GPP 1: Understanding Your Environmental Responsibilities – Good Environmental Practices⁵³;
- GPP 2: Above ground oil storage⁵⁴;
- GPP 3: Use and Design of Oil Separators in Surface Water Drainage Systems⁵⁵;
- GPP 5: Works and maintenance in or near water for construction or maintenance works near, in, or over water⁵⁶;
- GPP 6: Working at Construction and Demolition Sites⁵⁷;

⁵³ NetRegs (2020) GPP 1 Understanding your environmental responsibilities – good environmental practices (online). Available at: <https://www.netregs.org.uk/media/kawhpj0f/gpp-1.pdf> [Accessed: 21 July 2025]

⁵⁴ NetRegs (2018) GPP 2 Above ground oil storage (online). Available at: <https://www.netregs.org.uk/media/1475/gpp-2-pdf-jan-2018.pdf> [Accessed: 21 July 2025]

⁵⁵ NetRegs (2022) GPP 3 Use and design of oil separators in surface water drainage systems (online). Available at: <https://www.netregs.org.uk/media/1899/guidance-for-pollution-prevention-3-2022-update-v2.pdf> [Accessed: 21 July 2025]

⁵⁶ NetRegs (2018) GPP 5: Works and maintenance in or near water (online). Available at: <https://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf> [Accessed: 21 July 2025]

⁵⁷ NetRegs (2023) GPP 6: Working on construction and demolition sites (online). Available at: <https://www.netregs.org.uk/media/tsybv2y3/gpp6-working-on-construction-and-demolition-sites.pdf> [Accessed: 21 July 2025]

- GPP 8: Safe storage and disposal of used oils⁵⁸;
- GPP 13: Vehicle washing and cleaning⁵⁹;
- GPP 19: Vehicles: Service and Repair⁶⁰;
- GPP 21: Pollution Incident Response Plans⁶¹;
- GPP 22: Dealing with Spills⁶²; and
- GPP 26: Safe Storage – Drums and Intermediate Bulk Containers⁶³.

9.6.8 Additional good practice guidance for mitigation to protect the water environment can be found in the following key Construction Industry Research and Information Association (CIRIA) documents:

- C811 (2023) Environmental good practice on site guide⁶⁴;
- C609 (2004) Sustainable Drainage Systems, hydraulic, structural and water quality advice⁶⁵;
- C624 (2004) Development and flood risk – Guidance for the construction industry⁶⁶;
- C753 (2015) Publication C753 SuDS manual⁶⁷;
- C523 (2001) Sustainable Urban Drainage Systems – Best practice manual for England, Scotland, Wales and Northern Ireland⁶⁸;
- C649 (2006) Control of Water Pollution from Linear Construction⁶⁹; and
- C532 (2001) Control of water pollution from construction sites – Guidance for consultants and contractors⁷⁰.

⁵⁸ NetRegs (2021) GPP 8: Safe storage and disposal of used oils (online). Available at:

<https://www.netregs.org.uk/media/1900/guidance-for-pollution-prevention-8-2022-update.pdf> [Accessed: 21 July 2025]

⁵⁹ NetRegs (2021) GPP 13 Vehicle washing and cleaning (online). Available at:

<https://www.netregs.org.uk/media/1882/guidance-for-pollution-prevention-13-2022-update-v2.pdf> [Accessed: 21 July 2025]

⁶⁰ NetRegs (2017) GPP 19: Vehicles: Service and Repair (online). Available at: <https://www.netregs.org.uk/media/1417/gpp-19-vehicles-service-and-repair-no-e.pdf> [Accessed: 21 July 2025]

⁶¹ NetRegs (2021) GPP 21: Pollution incident response planning (online). Available at:

<https://www.netregs.org.uk/media/1436/gpp-21-final.pdf> [Accessed: 21 July 2025]

⁶² NetRegs (2018) GPP 22: Dealing with spills (online). Available at: <https://www.netregs.org.uk/media/1643/gpp-22-dealing-with-spills.pdf> [Accessed: 21 July 2025]

⁶³ NetRegs (2021) GPP 26 Safe storage - drums and intermediate bulk containers (online). Available at:

<https://www.netregs.org.uk/media/1885/guidance-for-pollution-prevention-26-2022-updated.pdf> [Accessed: 21 July 2025]

⁶⁴ Ciria (2023) Environmental good practice on site guide (fifth edition) (online). Available at:

https://www.ciria.org/ci/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=C811&Category=BOOK [Accessed: 21 July 2025]

⁶⁵ Ciria (2004) Sustainable drainage systems. Hydraulic, structural and water quality advice (C609B) (online). Available at:

https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C609B [Accessed: 21 July 2025]

⁶⁶ Ciria (2004) Development and flood risk - guidance for the construction industry (C624) (online). Available at:

https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C624 [Accessed: 21 July 2025]

⁶⁷ NBS (2015) Publication C753 SuDS manual (online). Available at:

https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C753 [Accessed: 21 July 2025]

⁶⁸ NBS (2001) Publication C523 Sustainable urban drainage systems - best practice manual for England, Scotland, Wales and Northern Ireland (online). Available at:

<https://www.thenbs.com/publicationindex/documents/details?Pub=CIRIA&DocId=261384> [Accessed: 21 July 2025]

⁶⁹ Ciria (2006) Control of water pollution from linear construction projects. Technical guidance (C649) (online). Available at:

https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C649&Category= [Accessed: 21 July 2025]

⁷⁰ Ciria (2001) Control of water pollution from construction sites. Guidance for consultants and contractors (C532) (online).

Available at: https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C532 [Accessed: 21 July 2025]

9.6.9 SEPA has published the following documents to support the implementation of the Environmental Authorisation (Scotland) Regulations 2018⁷² (EASR Authorisation)⁷¹:

- WAT-PS-06-02: Culverting of Watercourses (2015)⁷²;
- WAT-PS-07-03: Engineering in Artificial Inland Surface Waters (2015)⁷³;
- Construction Regulatory Guide (Water), Version 1.1 (2021)⁷⁴;
- WAT-RM-02: Regulation of Licence-level Engineering Activities v8.0 (2022)⁷⁵;
- WAT-SG-93: Guidance for Transport Infrastructure Projects v3.0 (2018)⁷⁶; and
- WAT-SG-28: Good Practice Guide - Intakes and Outfalls (2019)⁷⁷;

Management of Construction Site Runoff

9.6.10 Mitigation measures to manage site runoff from construction areas would include:

- Avoidance of wet weather working for sensitive activities, where practical, especially site clearance, earthworks and works to water features;
- Appropriate separate storage of topsoil / subsoil and materials, and at least 50m from water features on flat ground, other than where works are necessary adjacent to water features in which case a site/works-specific risk assessment would be carried out and additional measures added if required;
- Any earth bund / stockpile to be present for longer than two weeks would be either seeded, covered using geotextiles, or other measures provided to ensure it is not a source of excessive fine sediment in runoff to water features;
- The implementation of a temporary drainage system and other measures to manage pollution risk during construction (e.g., fabric silt fences, lagoons, bunds, straw bales, sandbags, lamella clarifiers or other proprietary measures etc. as may be required);
- Any dewatering of excavations would include measures where necessary to filter the water prior to discharge to a watercourse or ground (there shall be no discharge of any construction site runoff to existing ponds);
- The control of mud deposits at entry and exit points to the Site using wheel washing facilities and / or road sweepers operating during earthworks or other times as considered necessary; and

⁷¹ Scottish Government (2011) The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (SSI 2011/209). Available at: <https://www.legislation.gov.uk/ssi/2011/209/contents> Accessed: 21 July 2025]

⁷² SEPA (2011) WAT-PS-06-02: Culverting of Watercourses - Position Statement and Supporting Guidance (online). Available at: <https://www.sepa.org.uk/library> [Accessed: 21 July 2025]

⁷³ SEPA (2011) WAT-PS-07-03: Engineering in Artificial Inland Surface Waters (online). Available at: <https://www.sepa.org.uk/library> [Accessed: 21 July 2025]

⁷⁴ SEPA (2021) Construction Regulatory Guide (Water). Version 1.1. Available at: <https://www.sepa.org.uk/media/535245/construction-regulatory-guide-ver-11-sept-2021-final.pdf> [Accessed: 21 July 2025]

⁷⁵ SEPA (2022) WAT-RM-02: Regulation of Licence-level Engineering Activities v8.0. Available at: <https://www.sepa.org.uk/library> [Accessed: 21 July 2025]

⁷⁶ SEPA (2018) Guidance for Transport Infrastructure Projects (WAT-SG-93) v.3.0. Available at: <https://www.sepa.org.uk/library> [Accessed: 21 July 2025]

⁷⁷ SEPA (2019) Engineering in the Water Environment Good Practice Guide Intakes and outfalls (online). Available at: <https://www.sepa.org.uk/library> [Accessed: 21 July 2025]

- All plant would be kept clean but washed in dedicated areas only where runoff can be captured and appropriately treated prior to discharge from the site to watercourse or ground. Any contaminated water that cannot be treated on site would be collected and disposed of at a suitable licenced wastewater facility.

Management of Spillage Risk

9.6.11 To prevent chemicals, fuels / oils and other such substances from entering the water environment, adequate measures to control the storage, handling and disposal of these substances would be put in place prior to and during construction. Mitigation measures to control of spillages and leaks during construction works would include:

- Storage of fuel and chemicals would be in accordance with GPP 2: Above ground oil storage;
- Surface water drains on local roads or within the Site would be identified by the contractor(s) and where there is a risk that fine particulates or chemical spillages could enter them, they would be protected (e.g. covers or sandbags);
- Any containers / tanks of contaminating substances (e.g. fuel) onsite would be leak-proof and kept in a safe and secure building or compound from which they cannot leak, spill or be open to vandalism. The containers would be protected by temporary impermeable bunds (or drip trays for small containers) with a capacity of 110% of the maximum stored volume. Areas for transfer of contaminating substances (including refuelling areas) would be similarly protected;
- Any permanent oil storage tanks and temporary storage of 201 litres or more of oil in drums and mobile bowers, and ancillary pipe work, valve, filters, sight gauges and equipment would have secondary containment (e.g. bunding or drip trays);
- No oil / chemical tanks would be stored within 50m of a water feature and potentially further if ground is angled towards a water feature except for fixed / large plant associated with works that must occur close to water features or hand tools that must be placed in that location. Such chemical storage would be on flat, impermeable hard standing, and with an isolated drainage system;
- Particular care would be taken with the delivery and use of concrete and cement as these materials are highly corrosive and alkaline. No washing out of delivery vehicles to take place on the Site without suitable provision for the washing out water and provision of a suitable location (e.g. geotextile wrapped sealed skip, container or earth-bunded area) that is lined with a geotextile to prevent infiltration to ground. Such washing would not be allowed to flow into any drain or over the edge of a floating barge. The CEMP / WMP would contain a methodology for dealing with any washing out water, or wheel wash. Wash / wheel wash water would be adequately contained, prevented from entering any water feature, and either treated by an on site Water Treatment Plant or removed from the Site for appropriate disposal at a suitably licensed waste facility;
- Where possible re-fuelling would be undertaken in designated areas within main compounds or satellite compounds. It is possible that refuelling of mobile plant may be required by mobile fuel bowser. This would not be undertaken within 50m of a

water feature, and only on flat land (or otherwise a greater distance and other measures may be required subject to an on site/ works-specific risk assessment) and with a drip tray / plant nappy. Certain semi-mobile very large plant (e.g. cranes) may need to be located close to watercourses and potentially within 50m. Due to the difficulties in moving plant such as this they may need to be refuelled in situ. Again, a site / works-specific risk assessment would need to be undertaken by the contractor(s);

- Biodegradable hydraulic oils would be used where possible in all plant used during pre-construction and construction works, and only in plant and equipment working in or over water features;
- Spill kits and oil absorbent material would be available on the site in watertight containers in compounds, areas of works, strategically near water receptors and carried on all mobile plant. They would be regularly checked and topped up, especially after use. Appropriate training would be given to all construction workers in their use and spillage response;
- The CEMP would include an Emergency Response Plan;
- Any plant, machinery or vehicles would be regularly inspected and maintained to ensure they are in good working order and clean for use in a sensitive environment. This maintenance is to take place offsite if possible or only at designated areas in the site compounds;
- All fixed plant used for the construction of the Project will be self-bunded;
- Mobile plant to be in good working order, kept clean and fitted with plant 'nappies' at all times;
- The Site is to be secure to prevent any vandalism that could lead to a pollution incident; and
- Construction waste / debris are to be prevented from entering any surface water drainage or water feature.

Management of Groundwater Activities

9.6.12 To minimise the impact of any groundwater control activities during construction on the water receptors, the contractor(s) would undertake works in accordance with good practice as described earlier, as well as a project specific CEMP and WMP. The mitigation options deployed by the contractor(s) would be informed by the findings from the GI which would provide information of site-specific ground conditions, including groundwater quality and quantity data. As a minimum the contractor(s) would adhere to the following mitigation measures:

- Groundwater control would be implemented to ensure water levels in adjacent water features are maintained and any discharge is of a suitable quality;
- If discharging water to a nearby watercourse, the rate of discharge would need to be agreed with the relevant authority to ensure that there is no unacceptable increase in flood risk or risk of scour. Any discharge would need to be undertaken with the

agreement of the relevant statutory regulator and would need to comply with the pollution prevention requirements set out in the CEMP / WMP; and

- Managing the risk from groundwater flooding through appropriate working practices (during excavations) and with adequate plans and equipment in place for de-watering to ensure safe dry working environments.

Management of Leachate Migration from Cement-bounded Sand

- 9.6.13 It is assumed that cement bound sand (CBS) is likely to be used throughout the length of the AA Route Partial Undergrounding corridor. Several precautionary measures should be implemented to prevent the leaching of alkaline CBS into the surrounding water environment. Due to its highly alkaline nature, CBS has the potential to elevate the pH levels of adjacent surface water bodies, springs, groundwater aquifers, and GWDTEs, which may adversely affect these sensitive habitats.
- 9.6.14 The use of CBS in proximity to environmentally sensitive areas such as GWDTEs would be avoided wherever feasible. In instances where CBS application is necessary, the installation of impermeable liners or membranes beneath the CBS layer is strongly recommended to prevent the migration of alkaline leachate into the broader water environment. Additionally, CBS should be allowed to fully cure prior to any contact with soil or water to minimize potential contamination risks.
- 9.6.15 Temporary, localised drainage trenches would be constructed to divert surface water runoff away from the work areas during CBS installation, helping to keep the trenches dry. If water does enter the trenches, it would be pumped to a designated treatment area and treated with carbon dioxide to neutralise pH levels. Any products used in the trench (e.g., settlement ponds) must be impermeable to prevent leachate migration.
- 9.6.16 CBS would be either batched on site at a centralised location and then transported to the cable route as needed, or transported from other Sites requiring CBS nearby. The batching plant would operate as a closed system to contain and manage any cementitious water. If discharge to the water environment is required, the water would be treated to meet quality standards, and appropriate discharge consents or registrations would be obtained in advance.
- 9.6.17 All mitigation measures outlined above would be verified through on site pH monitoring. Should significant changes in pH be detected, the mitigation approach would be reviewed and revised as necessary.

9.7 Assessment of Effects, Mitigation and Residual Effects of the WB Route

Assessment of Construction Effects

Groundwater - Quality

- 9.7.1 The construction of the Project would require earthworks and excavations for each of the new steel towers (62 in total) which have the potential to interact with groundwater and create temporary pathways along which contaminants from construction works could pass. Potential pollutants including oils, hydrocarbons, inorganics, sulphates, sulphides, cement, concrete, waste, and wastewater associated with construction works would be

present on the Site. The potential impacts to groundwater receptors during construction include:

- Groundwater contamination from accidental spills;
- Deterioration of groundwater quality from uncontrolled construction runoff; and
- Lateral indirect migration of contaminants to surface water features and GWDTEs.

9.7.2 However, when considering the large scale of the Scottish Coal Measures Aquifer Group and Clackmannan Aquifer Group and the small scale of the foundation footprints (4m x 4m x 0.5m) it is unlikely that if a contamination event were to occur it would impact the entire aquifer. Especially when considering the implementation of the embedded and standard mitigation.

9.7.3 Therefore, for the Scottish Coal Measures Aquifer Group and Clackmannan Aquifer Group (medium importance) there is a temporary, direct, certain and short-term negligible impact resulting in a **slight adverse (not significant) effect**.

9.7.4 The Project predominantly overlies Glacial Till and peat. Glacial Till comprises gravel and sands that may store minor volumes of groundwater, but its clay matrix generally limits permeability. Peat is typically waterlogged. These conditions suggest that any superficial aquifers present are highly localised and discontinuous. Consequently, the installation of steel towers, which involves small, isolated foundation footprints would impact the groundwater quality. GI will confirm the extent of these deposits, but any potential contamination would be confined to a very small scale. Therefore, for the Superficial Deposits Aquifer (medium importance) there would also be a temporary, direct, uncertain and short-term negligible adverse impact which results in a **slight adverse (not significant) effect**.

Groundwater – Quantity

9.7.5 The construction of the WB Route would require excavations and foundations to allow for the new towers. There is limited groundwater level information throughout the Study Area, therefore it is assumed that groundwater levels are likely to be shallow as a worst-case scenario. Where excavations would encounter the water table, dewatering and pumping may be required.

9.7.6 Although there are 62 new towers to be constructed, due to small area of the tower foundations (4m x 4m x 0.5m) groundwater flow and direction is unlikely to be impacted as a result of the relatively large size of all three aquifers. Dewatering would likely only cause a very small, temporary and localised change in groundwater flow direction. Therefore, for the Superficial Deposits Aquifer (medium importance), the Scottish Coal Measures Aquifer Group and Clackmannan Aquifer Group (high importance), there is a temporary negligible, direct, certain, short-term adverse impact resulting in a **slight adverse (not significant) effect**.

Surface Water

9.7.7 The potential impacts on surface water quality from the construction of the new-build overhead line includes the potential for fine sediment runoff and chemical pollution particularly from works associated with the new steel tower foundations and the temporary trackways. Table 9-17 considers the works that are proposed near each

identified water feature including the predicted magnitude of impacts and the significance of the effects due to the construction of the Overhead Line.

- 9.7.8 In summary, runoff from temporary trackways and steel tower construction works could lead to temporary, uncertain and short-term negligible adverse impacts to most nearby surface water features, with contaminants potentially entering the water features both directly and indirectly. This would result in a **slight adverse (not significant) effect** for high and medium importance receptors. These risks are expected to remain minimal given the application of robust good-practice mitigation measures outlined within the Section 9.6 Standard Mitigation.
- 9.7.9 Two water features, BW-10 and BW-14, are identified as being at a moderate (significant) effect due to the proximity of steel towers. WB040 is located approximately 1m away from the bank of BW-10 and WB023 is located approximately 5m away from the bank of BW-14. These close distances mean there are fewer contaminant pathway blockages resulting in a greater risk of contamination entering the water feature.

Table 9-17 Impacts and Effects on Surface Water Quality during construction of the New-Build Overhead Line

Water Feature	Proximity to the works	Importance	Magnitude of Impact	Significance of Effect
Bonny Water / Red Burn	80m from WB059 and other overhead lines works to be within the catchment including temporary trackways.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-1	Crossed by temporary trackways (Cr9). And other work associated with the overhead line to be within the catchment.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-2	40m from WB056 and 20m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-3	27m from WB059 and 50m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-6	Crossed by temporary trackways twice (Cr5 and Cr6)	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)

	and 11m from WB047.			
BW-9	Crossed by temporary trackways (Cr7) and 40m from WB042.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-10	Crossed by temporary trackways (Cr8) and 1m from WB040.	Medium	Minor adverse. Impacts direct, short-term, uncertain and temporary.	Moderate adverse (significant)
BW-11	Crossed by temporary trackways four times (Cr10, Cr11 and Cr13) and 10m from WB037.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-12	Crossed by temporary trackways (Cr14).	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-13	31m from WB028.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-14	5m from WB023.	Medium	Minor adverse. Impacts direct, short-term, uncertain and temporary.	Moderate adverse (significant)
BW-16	50m from WB21C and 30m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-17	12m from WB021A.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-20	16m from temporary trackways and 80m from WB041.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-22	5m from Temporary Trackways and 45m from WB038.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)

BW-24	35m from Temporary Trackways and 45m from WB039.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
River Carron	740m from WB059.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Forth and Clyde Canal	70m from WB058 and there will be temporary scaffolding over the canal.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Luggie Water	70m from WB016.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Glencryan Burn	115m from WB021 and crossed by temporary trackways (Cr15).	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
LW-1	40m from WB002.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
LW-4	45m from WB004 crossed by Temporary Trackways (Cr18).	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
LW-6	30m from WB005.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
LW-7	75m from WB007 and crossed by temporary trackways (Cr17).	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
LW-8	187m from WB009 and 19m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)

LW-10	20m from WB010.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
LW-13	10m from WB014 and crossed by temporary trackways (Cr16).	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
LW-14	70m from WB012 and 15m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
LW-15	20m from WB013.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
LW-16	24m from WB014.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
LW-18	146m from WB010.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)

Hydromorphology

- 9.7.10 The Project includes the construction of temporary crossings for temporary trackways as described in 'Watercourse Crossings' and shown in Volume 2, Figure 9.4. There are also several components of the Project that are located within the recommended 'Riparian Buffer Zones'. Watercourse crossings in particular could involve some intrusive works which could physically impact the water features.
- 9.7.11 Table 9-18 lists the impacts and effects on hydromorphology for each of the relevant receptors.

Table 9-18 Impacts and Effects on Hydromorphology during construction of the New-Build Overhead Line

Water Feature	Proximity to the Works	Importance	Magnitude of Impact	Significance of Effect
BW-2	40m from WB056.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
BW-3	27m from WB059.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)

BW-6	Crossed by temporary trackways twice (Cr5 and Cr6).	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
BW-9	Crossed by temporary trackways (Cr7).	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
BW-10	Crossed by temporary trackways (Cr8).	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse (watercourse crossing).	Neutral (not significant)
BW-10	1m from WB040.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse (steel tower works).	Neutral (not significant)
BW-11	Crossed by temporary trackways four times (Cr10, Cr11 and Cr13).	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
BW-12	Crossed by temporary trackways (Cr14).	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
BW-13	31m from WB028.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
BW-14	5m from WB023.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
BW-17	12m from WB021A.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
BW-22	45m from WB038.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
BW-24	45m from WB039.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
LW-1	40m from WB002.	Medium	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Slight (not significant)
LW-4	Crossed by Temporary Trackways (Cr18).	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)

LW-6	30m from WB005.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
LW-7	Crossed by temporary trackways (Cr17).	Medium	Negligible adverse. Impacts direct, short-term, temporary and low adverse. (existing crossing)	Slight (not significant)
LW-10	20m from WB010.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
LW-13	Crossed by temporary trackways (Cr16).	Medium	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Slight (not significant)
LW-15	20m from WB013.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
LW-16	24m from WB014.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
Forth and Clyde Canal	Temporary scaffolding over the canal.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse (existing crossing).	Neutral (not significant)

Summary of Significant Effects

- 9.7.12 A **moderate (significant) effect** has been predicted for water features BW-10 and BW-14 for water quality impacts from sediment-laden runoff and accidental chemical spillages. BW-10 is crossed by temporary trackways (Cr8) and is 1m from WB040. BW-14 is located 5m from WB023. The close distance between these steel towers and their respective water features means there are fewer contaminant pathways blockages, meaning there is a greater risk of contaminated water entering the water feature.
- 9.7.13 There are no anticipated significant effects as a result of the construction of the WB Route and associated works on groundwater receptors.

Proposed Additional Mitigation Measures

Micro-siting for steel towers WB040 and WB023

- 9.7.14 Micro-siting is proposed for steel towers WB040 and WB023 as a means of mitigating potential runoff and spillages into BW-10 and BW-14. This would involve making small, incremental adjustments to the positioning of WB040 and WB023 as they are installed during the construction phase to minimise these potential impacts as they may arise. WB040 and WB023 would be micro-sited as far from the watercourses as practicable within the constraints of the detailed design. This micro-siting exercise would be undertaken during the detailed design phase and would aim to maximise separation from both BW-10 and BW-14 while maintaining engineering feasibility. In line with SEPA guidance, a 50m riparian buffer is recommended for excavations; this buffer would be used as a benchmark during micro-siting, and every effort would be made to implement it

or achieve the greatest possible offset. Where full compliance with the buffer cannot be achieved, mitigations such as temporary silt fencing, drainage controls, and pollution prevention measures would be incorporated to reduce residual risk, with additional space provided by increased separation through micro-siting enabling these measures to be placed.

- 9.7.15 Water quality monitoring before, during and after construction would also be implemented to ensure that mitigation measures selected are effective. More information on monitoring can be found within 'Monitoring'.

Micro-siting of Moderate GWDTEs

- 9.7.16 Where GWDTEs of moderate importance have been identified, micro-siting is proposed for any works within the designated SEPA buffer zones for assessing GWDTEs to reduce potential impacts on groundwater quality and flows from affecting the GWDTE. The works this relates to, including tower number, is set out within Volume 3, Appendix 9.6 GWDTE Assessment.

Monitoring

Water Quality Monitoring Plan

- 9.7.17 During pre-construction and construction phases it is proposed to undertake water quality monitoring to ensure that mitigation measures are operating as planned and managing the risk of pollution of water features during works effectively. Monitoring will help to ensure that should pollution occur it is identified as quickly as possible and appropriate action is taken. A Water Quality Monitoring Plan and subsequent delivery of that monitoring is proposed for any receptors considered at risk. Water Features included within Table 9-17 should be incorporated into the monitoring plan. As most of these receptors have been deemed to be at negligible impact and not significant risk, daily visual observations upstream and downstream of active works close to or discharging into these watercourses (increasing in frequency during storms) would likely be sufficient, if any monitoring is deemed necessary at all. Receptors deemed to be at significant risk may require daily visual and olfactory observations or after heavy or prolonged rainfall, in situ monitoring using a calibrated hand-held probe, and potentially grab samples on a regular or ad hoc basis for analysis at an accredited laboratory.
- 9.7.18 A water quality monitoring programme would ensure that mitigation measures are operating as planned and managing the risk of water pollution. The purpose of the monitoring programme is also to ensure that should pollution occur it is identified as quickly as possible and appropriate action is taken in line with the Emergency Response Plan. To support the construction phase monitoring, a pre-construction baseline would need to be determined.
- 9.7.19 The water quality monitoring programme would be developed by the Principal Contractor in consultation with SEPA and other relevant stakeholders during the process of obtaining EASR authorisation for works affecting, or for temporary discharges to, the water features and watercourses in and around the Project.

- 9.7.20 Due to the linear nature of the WB Route it may be sensible to phase the pre-construction and construction monitoring depending on the construction timeline and surface water catchments.
- 9.7.21 Residual Effects Table 9-19 presents a summary of the residual effects of the construction of the new build overhead line on the surface water quality and the quality and quantity of groundwater bodies. As no significant effects were concluded for the hydromorphology of surface water features, no residual effects are predicted for this.

Table 9-19 Summary of Effects: Construction

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
Clackmannan Aquifer Group	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Slight adverse	Not Significant
	Groundwater Flows and Levels – Dewatering and Excavations	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Slight adverse	Not Significant
Scottish Coal Measures Aquifer Group	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Slight adverse	Not Significant
	Groundwater Flows and Levels – Dewatering and Excavations	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Slight adverse	Not Significant
Superficial Aquifer	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	None required	Slight adverse	Not Significant
	Groundwater Flows and Levels – Dewatering and Excavations	Slight adverse (not significant)	None required	Slight adverse	Not Significant

Bonny Water / Red Burn	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
BW-1	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	New temporary trackway crossing	Neutral (not significant)	None Required	Slight adverse	Not Significant
BW-2	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
BW-3	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
BW-6	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	New temporary trackway crossing	Neutral (not significant)	None Required	Neutral	Not Significant
BW-9	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	New temporary trackway crossing	Neutral (not significant)	None Required	Neutral	Not Significant
BW-10	Accidental spillages and sediment-laden runoff	Moderate (significant)	Micro-siting of WB040 and water quality monitoring	Slight adverse	Not Significant
	New temporary trackway crossing	Neutral (not significant)	None Required	Neutral	Not Significant
BW-11	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant

	New temporary trackway crossing	Neutral (not significant)	None Required	Neutral	Not Significant
BW-12	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	New temporary trackway crossing	Neutral (not significant)	None Required	Neutral	Not Significant
BW-13	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
BW-14	Accidental spillages and sediment-laden runoff	Moderate (significant)	Micro siting of WB023 and water quality monitoring	Slight adverse	Not Significant
BW-16	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
BW-17	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
BW-20	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
BW-22	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
BW-24	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
River Carron	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
Forth and Clyde Canal	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant

	Use of existing watercourse crossing	Neutral (not significant)	None Required	Neutral	Not Significant
Luggie Water	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
Glencryan Burn	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
LW-1	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
LW-4	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	New temporary trackway crossing	Neutral (not significant)	None Required	Neutral	Not Significant
LW-6	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
LW-7	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Use of existing watercourse crossing	Slight (not significant)	None Required	Slight adverse	Not Significant
LW-8	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
LW-10	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
LW-13	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant

	New temporary trackway crossing	Slight (not significant)	None Required	Slight adverse	Not Significant
LW-14	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
LW-15	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
LW-16	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
LW-18	Accidental spillages and sediment-laden runoff	Slight (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant

9.8 Assessment of Effects, Mitigation and Residual Effects of the Upgraded Overhead Lines

Assessment of Construction Effects

Groundwater - Quality

- 9.8.1 The uprating of the XX Route, XR Route and ZG Route may require excavations or works at depth at all foundations, assuming a worst-case scenario where all existing foundations require improvements which would have the potential to interact with groundwater and create temporary pathways along which contaminants from construction works could pass. Potential pollutants including oils, hydrocarbons, inorganics, sulphates, sulphides, cement, concrete, waste, and wastewater associated with construction works would be present on Site. The potential impacts to groundwater receptors during construction include:
- Groundwater contamination from accidental spills;
 - Deterioration of groundwater quality from uncontrolled construction runoff; and
 - Lateral indirect migration of contaminants to surface water features and GWDTEs.
- 9.8.2 However, when considering the large scale of the Scottish Coal Measures Aquifer Group and Clackmannan Aquifer Group and the small scale of the foundation footprints (4m x 4m x 0.5m) it is unlikely that if a contamination event were to occur it would impact the entire aquifer, especially when considering the implementation of the embedded and standard mitigation.

9.8.3 Therefore, for the Scottish Coal Measures Aquifer Group and Clackmannan Aquifer Group (high importance) there would be a temporary, direct, certain and short-term negligible impact resulting in a **slight adverse (not significant) effect**.

9.8.4 The Project predominantly overlies Glacial Till and peat. Glacial Till comprises gravel and sands that may store minor volumes of groundwater, but its clay matrix generally limits permeability. Peat is typically waterlogged. These conditions suggest that any superficial aquifers present are highly localised and discontinuous. Consequently, the uprating of the steel towers, which involves small, isolated foundation footprints would impact the groundwater quality. GI would confirm the extent of these deposits, but any potential contamination would be confined to a very small scale. Therefore, for the Superficial Deposits Aquifer (medium importance) there would also be a temporary, direct, uncertain and short-term negligible adverse impact which results in a **slight adverse (not significant) effect**.

Groundwater- Quantity

9.8.5 The uprating of XX Route, XR Route and ZG Route lines may require works to foundations at all towers, assuming a worst-case scenario. There is limited groundwater level information throughout the Study Area, therefore it is assumed that groundwater levels are likely to be shallow as a worst-case scenario. Where excavations would encounter the water table, dewatering and pumping may be required.

9.8.6 Due to the small area of the tower foundations (4m x 4m x 0.5m), even in a worst-case scenario where all foundations require works groundwater flow and direction is unlikely to be impacted as a result of the relatively large size of all three aquifers. Dewatering would likely only cause a very small, temporary and localised change in groundwater flow direction. Therefore, for the Superficial Deposits Aquifer (medium importance) and the Scottish Coal Measures Aquifer Group and Clackmannan Aquifer Group (high importance), there would be a temporary direct, certain and short-term negligible adverse impact resulting in a **slight adverse (not significant) effect**.

Groundwater Abstraction Point

9.8.7 SEPA recommend a three-step approach⁷⁸ to assessing groundwater abstractions, with the first step being to identify all the abstraction points within the recommended buffer zones. Only one abstraction point has been identified, ABS-01 (CAR/L/1012583) is situated approximately 10m from XX021A where excavation would reach up to 4m.

9.8.8 The second step is to qualitatively assess the source and pathway connections to the receptor. The abstraction point is located within the Scottish Coal Measures Aquifer Group, a moderately productive aquifer characterized by fracture flow. It also lies within Glacial Till, whose permeability can vary depending on its composition. A fault line is mapped approximately 30m from the abstraction point on the BGS GeoIndex. This proximity suggests that the abstraction is likely influenced by fracture networks associated with the fault within the Scottish Coal Measures Aquifer Group. There is not enough freely

⁷⁸ SEPA Guidance on Assessing the Impacts of Development on Groundwater Abstractions (2024) (online). Available: <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> [Accessed: 20 May 2025]

available information to be fully confident of the flow and direction groundwater. However, it is likely that within the upper weathered zone groundwater flows within the topography towards the west surrounding the abstraction point. Deeper sections may be more influenced by the dip of the geological bed and the direction of the fault line. The site is also likely to be influenced by legacy coal mining.

- 9.8.9 As described in the baseline there is limited information of the depth of the water table. Therefore, it is unknown whether the excavations for XX021A would intercept the water table or not. For this assessment, a worst-case scenario has been assumed where works would intercept groundwater.
- 9.8.10 XX021A is situated to the east of the abstraction point. During the excavation for the steel towers a direct contaminant pathway to aquifer could be created. Sediment-laden runoff and contaminated water from accident spillages could enter the aquifer and flow down to the abstraction point reducing the water quality. However, with standard mitigation measures in place the magnitude would be a negligible direct, certain, temporary and short-term impact resulting in for the low importance receptor a **slight adverse (not significant) effect**.
- 9.8.11 During the excavation process for XX021A, dewatering may be required. As stated, the depth of the water table is currently unknown and so the worst-case scenario has been applied where the water table would intercept the excavations. Therefore, dewatering could cause groundwater flow to be redirected towards the steel towers rather than the EASR (formally CAR) abstraction point. However, this would only be temporary during the construction phase and once construction is completed the groundwater table would return. Although, without detailed GI detail there is a small level of uncertainty with this assumption. Overall, impacts to groundwater level and flow to ABS-01 (CAR/L/1012583) is predicted to be direct, uncertain, temporary and short-term moderate impact resulting in for the low importance receptor a **moderate adverse (significant) effect**.

Surface Water

- 9.8.12 The potential impacts on surface water quality from the upgrading of XX Route, XR Route and ZG Route include potential for fine sediment runoff and chemical pollution. This risk is associated with the works that would be carried out for foundation improvements. At this stage, it is not known which tower locations would have foundation improvements, and therefore a worst-case scenario has been considered where all steel towers require foundation improvements. Table 9-20 considers these works for each identified water feature including the predicted magnitude of impacts and the significance of the effects due to the construction of the overhead line.
- 9.8.13 In summary, runoff from temporary trackways and foundation improvements works could lead to temporary, uncertain, direct short-term negligible adverse impacts to nearby surface water features, with contaminants potentially entering the water features both directly and indirectly. These risks are expected to remain minimal given the application of robust good-practice mitigation measures outlined within Section 9.6 Standard Mitigation.

Table 9-20 Impacts and Effects on Surface Water Quality during construction of the Upgraded Overhead Line

Water Feature	Proximity to the works	Importance	Magnitude of Impact	Significance of Effect
Auchter Water	Crossed by temporary trackways Cr24 and 40m to 50m to XR034.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
AW-2	145m from XR037 and 40m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
AW-7	60m from XR030 and 20m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
AW-8	50m from XR028.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
AW-9	50m from XR027 and crossed by a temporary trackway (Cr23).	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
AW-10	150m from XR034 and 5m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
South Calder Water	124m from XR023 and 50m from temporary trackways.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SCW-1	10m from XR025.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SCW-2	90m from XR024 and 10m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SCW-3	100m from XR022.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SCW-4	14m from XR022.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)

SCW-5	5m from XR021.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SCW-6	50m from XR018.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SCW-7	5m from XR022 and 5m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Catchment 13-1	10m from XR015.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Catchment 13-2	144m from XR015.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Tillan Burn	Crossed by temporary trackways (Cr22) and 35m from XR003.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
TB-1	150m from XR008 and 40m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
TB-2	45m from Temporary Trackways and 200m from XR006.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
TB-4	15m from XR009.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Shirrel Burn / Thankerton Burn / Legbrannock Burn	Crossed by temporary trackways (Cr21) and 190m from XR004.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
ShirrelB-5	45m from XR002.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)

ShirrelB-6	30m from XX048.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
North Calder Water	Crossed by temporary trackways Cr19 and 50m from XX033A.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
NCW1-3	50m from XX035A.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
NCW1-4	15m from XX034A.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
NCW1-5	45m from XX032.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Catchment 9-2	150m from XX045.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Catchment 9-3	10m from XX046.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Shotts Burn	210m from XX042.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
ShottsB-3	50m from XX039 and 30m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
South Burn	50m from XX029.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SB-3	85m from XX027 and 45m from XX027 pulling position and access track.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SB-5	30m from XX024.	Medium	Negligible adverse. Impacts direct, short-	Slight adverse (not significant)

			term, uncertain and temporary.	
SB-6	130m from XX023.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SB-8	30m from XX019.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SB-9	Within 10m of a temporary trackway.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SB-10	30m from XX018 and crossed by temporary trackways (Cr20).	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SB-12	70m from XX012.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SB-13	25m from XX015.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SB-15	35m from XX025.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SB-16	50m from XX023.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Catchment 19-1	80m from XX008 and 10m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Catchment 19-2	50m from XX004 and 15m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Catchment 19-7	50m from XX001A.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Catchment 19-8	45m from XX003 and 25m from	Medium	Negligible adverse. Impacts direct, short-	Slight adverse (not significant)

	temporary Trackways.		term, uncertain and temporary.	
Catchment 19-9	40m from XX003 and 30m from Temporary Trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Pow Burn / Tor Burn	950m from ZG001A.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
PB-5	475m from ZG004 and crossed by temporary trackways (Cr2).	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
PB-6	180m from ZG006.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
River Carron	15m from ZG011 and 30m from temporary trackways.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
RC1-1	55m from ZD095.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
RC1-2	30m from ZD095 and crossed by temporary trackways (Cr1).	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
RC1-5	100m from ZG005 and 13m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
RC1-6	20m from ZG007.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
RC2-1	40m from ZG009 and crossed by temporary trackways (Cr3).	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
RC2-2	25m from ZG008 and 45m from temporary trackways.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-3	65m from ZG013 and 50m from	Medium	Negligible adverse. Impacts direct, short-	Slight adverse (not significant)

	temporary trackways.		term, uncertain and temporary.	
Catchment 17-2	30m from XR046.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)

Hydromorphology

- 9.8.14 The Project includes the construction of temporary crossings for temporary trackways as described in 'Watercourse Crossings'. There are also several components of the Project that are located within the recommended 'Riparian Buffer Zones'. Watercourse crossings could involve some intrusive works which could physically impact the water features.
- 9.8.15 Table 9-21 lists the impacts and effects on hydromorphology for each of the relevant receptors.

Table 9-21 Impacts and Effects on Hydromorphology during construction of the Upgraded Overhead Line

Water Feature	Proximity to the Works	Importance	Magnitude of Impact	Significance of Effect
Auchter Water	Crossed by temporary trackways (Cr24).	Medium	Negligible adverse. Impacts direct, short-term, temporary and low adverse (existing crossing).	Slight (not significant)
AW-8	50m from XR028.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
AW-9	Crossed by a temporary trackways (Cr23).	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
SCW-1	10m from XR025.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
SCW-4	14m from XR022.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
SCW-5	5m from XR021.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
SCW-6	50m from XR018.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)

SCW-7	5m from XR022.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
Catchment 13-1	10m from XR015.	Medium	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Slight (not significant)
Tillan Burn	Crossed by temporary trackways (Cr22).	Medium	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Slight (not significant)
TB-4	15m from XR009.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
ShirrelB-5	45m from XR002.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
ShirrelB-6	30m from XX048.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
North Calder Water	Crossed by temporary trackways (Cr19).	Medium	Negligible adverse. Impacts direct, short-term, temporary and low adverse (existing crossing).	Slight (not significant)
NCW1-3	50m from XX035A.	Medium	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Slight (not significant)
NCW1-4	15m from XX034A.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
NCW1-5	45m from XX032.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
Catchment 9-3	10m from XX046.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
ShottsB-3	50m from XX039.	Medium	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Slight (not significant)

SB-5	30m from XX024.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
SB-8	30m from XX019.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
SB-10	Crossed by temporary trackways (Cr20).	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
SB-13	25m from XX015.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
SB-15	35m from XX025.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
Catchment 19-8	45m from XX003.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
Catchment 19-9	40m from XX003.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
PB-5	Crossed by temporary trackways (Cr2).	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse. (existing crossing)	Neutral (not significant)
River Carron	15m from ZG011.	High	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Slight (not significant)
RC1-6	20m from ZG007.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)
RC2-1	Crossed by temporary trackways (Cr3).	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse. (existing crossing)	Neutral (not significant)
RC2-2	25m from ZG008.	Low	Negligible adverse. Impacts direct, short-	Neutral (not significant)

			term, temporary and low adverse.	
Catchment 17-2	30m from XR046.	Low	Negligible adverse. Impacts direct, short-term, temporary and low adverse.	Neutral (not significant)

Summary of Significant Effects

- 9.8.16 There are no anticipated significant effects from the construction of the Uprated Overhead Lines and associated works on surface water.
- 9.8.17 A **moderate (significant) effect** has been predicted for ABS-01 for groundwater flow and level.

Proposed Additional Mitigation Measures

Micro-siting for steel tower XX021A

- 9.8.18 Prior to construction, the foundations for XX021A should be carefully micro-sited to minimise potential risk to ABS-01. This process should be informed by the findings of the GI, which would provide critical data on subsurface conditions. If investigations confirm that the water table lies significantly deeper than the proposed foundation depth, the likelihood of direct interaction with groundwater—and therefore the associated risk—would be substantially reduced. Similarly, if XX021A is located within thick Glacial Till deposits (greater than 5 m) rather than bedrock, the low permeability of these sediments would act as an additional barrier, further reducing connectivity and risk. Conversely, if shallow groundwater or permeable pathways are encountered, additional mitigation measures may be required. Furthermore, the siting of XX021A must avoid the fault line identified on BGS mapping, as faults can act as preferential flow pathways, increasing hydraulic connectivity and potential contaminant migration. Incorporating these considerations into the micro-siting process would ensure that the design minimizes hydrogeological risk and maintains the integrity of ABS-01.

Micro-siting of Moderate GWDTEs

- 9.8.19 Where GWDTEs of moderate importance have been identified, micro-siting is proposed for any works within the designated SEPA buffer zones for assessing GWDTEs to reduce potential impacts on groundwater quality and flows from affecting the GWDTE. The works this relates to including tower number is set out within Volume 3, Appendix 9.6 GWDTE Assessment.

Monitoring

Water Quality Monitoring Plan

- 9.8.20 During pre-construction and construction phases it is proposed to undertake water quality monitoring to ensure that mitigation measures are operating as planned and managing the risk of pollution of water features during works effectively and appropriate action is taken in line with the Emergency Response Plan. Monitoring will help to ensure that should pollution occur it is identified as quickly as possible and appropriate action is taken. A Water Quality Monitoring Plan and subsequent delivery of that monitoring, developed in consultation with SEPA and other relevant stakeholders, is proposed for any receptors

considered at risk. Receptors included within Table 9-20 should be incorporated into the monitoring plan. As these receptors have been deemed to be at negligible impact and not significant risk, daily visual observations upstream and downstream of active works close to or discharging into these watercourses (increasing in frequency during storms) would likely be sufficient, if any monitoring is deemed necessary at all.

- 9.8.21 Due to the linear nature of the Uprated Overhead Line, it may be sensible to phase the pre-construction monitoring, construction and post-construction monitoring depending on the construction timeline and surface water catchments.

Groundwater Level Monitoring (ABS-01)

- 9.8.22 ABS-01 is a groundwater abstraction required for industrial use. To ensure that groundwater levels and flows are maintained it is recommended that groundwater level monitoring is carried out during construction. Monitoring would help identify any impacts that might be a consequence of the construction works so that appropriate action can be taken.
- 9.8.23 Volume 3, Appendix B of the 'Guidance on Assessing the impacts of development on groundwater abstractions'⁷⁹⁴⁵ recommends at least 12 months of monitoring groundwater from the abstraction before construction, fortnightly during construction and at least monthly for 12 months post construction. Additional sampling may be required in the event of an investigation of an incident as described below. However, given the small scale of the works it may be sensible to carry out a reduced baseline monitoring period.
- 9.8.24 As ABS-01 is not a drinking water supply, no water quality monitoring has been recommended. Instead level only to be undertaken pre- and during construction on monthly and fortnightly basis respectively.

Residual Effects

- 9.8.25 Table 9-22 presents a summary of the residual effects of the construction of the Uprated Overhead Line on the water quality and hydromorphology of surface water features and the quality and quantity of groundwater bodies.

Table 9-22 Summary of Effects: Construction

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
Clackmannan Aquifer Group	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Neutral	Not Significant
	Groundwater Flows and	Slight adverse	Micro-siting of moderate	Neutral	Not Significant

⁷⁹ SEPA Guidance on Assessing the Impacts of Development on Groundwater Abstractions (2024) (online). Available: <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> [Accessed: 20 May 2025]

	Levels – Dewatering and Excavations	(not significant)	GWDTEs where present.		
Scottish Coal Measures Aquifer Group	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Neutral	Not Significant
	Groundwater Flows and Levels – Dewatering and Excavations	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Neutral	Not Significant
Superficial Aquifer	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Neutral	Not Significant
	Groundwater Flows and Levels – Dewatering and Excavations	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Neutral	Not Significant
	Groundwater Flows and Levels – Dewatering and Excavations	Moderate adverse (significant)	Micro siting of XX021A and water quality monitoring and groundwater level monitoring	Slight adverse	Not Significant
ABS-01	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Moderate adverse (significant)	Micro siting of XX021A and water quality monitoring and groundwater level monitoring	Slight adverse	Not Significant
Auchter Water	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant

	Use of existing watercourse crossing	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
AW-2	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
AW-7	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
AW-8	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
AW-9	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	New temporary trackway crossing	Neutral (not significant)	None Required	Slight adverse	Not Significant
AW-10	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
South Calder Water	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
SCW-1	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within	Neutral (not significant)	None Required	Slight adverse	Not Significant

SCW-2	recommende d riparian buffer zone (within 50m of foundation works)				
	Accidental spillages and sediment- laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
SCW-3	Accidental spillages and sediment- laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
SCW-4	Accidental spillages and sediment- laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommende d riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
SCW-5	Accidental spillages and sediment- laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommende d riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
SCW-6	Accidental spillages and sediment- laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommende	Neutral (not significant)	None Required	Slight adverse	Not Significant

SCW-7	d riparian buffer zone (within 50m of foundation works)				
	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
Catchment 13-1	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
Catchment 13-2	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
Tillan Burn	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	New temporary trackway crossing	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
TB-1	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
TB-2	Accidental spillages and	Slight adverse	WMP and Water	Slight adverse	Not Significant

	sediment-laden runoff	(not significant)	Quality Monitoring		
TB-4	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
Shirrel Burn / Thankerton Burn / Legbrannock Burn	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
ShirrelB-5	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
ShirrelB-6	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
North Calder Water	Accidental spillages and	Slight adverse	WMP and Water	Slight adverse	Not Significant

	sediment-laden runoff	(not significant)	Quality Monitoring		
NCW1-3	New Temporary Trackway crossing	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
NCW1-4	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
NCW1-5	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
Catchment 9-2	Accidental spillages and	Slight adverse	WMP and Water	Slight adverse	Not Significant

	sediment-laden runoff	(not significant)	Quality Monitoring		
Catchment 9-3	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
Shotts Burn	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
ShottsB-3	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
South Burn	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
SB-3	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
SB-5	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended	Neutral (not significant)	None Required	Slight adverse	Not Significant

	d riparian buffer zone (within 50m of foundation works)				
SB-6	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
SB-7	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
SB-8	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
SB-9	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
SB-10	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	New Temporary Trackway crossing	Neutral (not significant)	None Required	Slight adverse	Not Significant
SB-12	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
SB-13	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component	Neutral (not significant)	None Required	Slight adverse	Not Significant

	within recommended riparian buffer zone (within 50m of foundation works)				
SB-15	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
SB-16	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
Catchment 19-1	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
Catchment 19-2	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
Catchment 19-7	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
Catchment 19-8	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant

Catchment 19-9	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
Pow Burn/Tor Burn	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
PB-5	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Use of existing watercourse crossing	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
PB-6	Accidental spillages and sediment-laden runoff	Neutral (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
River Carron	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
RC1-1	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
RC1-2	Accidental spillages and	Slight adverse	WMP and Water	Slight adverse	Not Significant

	sediment-laden runoff	(not significant)	Quality Monitoring		
	New Temporary Trackway crossing	Neutral (not significant)	None Required	Slight adverse	Not Significant
RC1-5	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
RC1-6	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
RC2-1	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
RC2-2	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of	Neutral (not significant)	None Required	Slight adverse	Not Significant

	foundation works)				
BW-3	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
Catchment 17-2	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Channel altered by component within recommended riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant

9.9 Assessment of Effects, Mitigation and Residual Effects of the CB Route Removal

Assessment of Construction Effects

Groundwater - Quality

- 9.9.1 The dismantling of CB Route would require excavations to the existing foundations at a depth of approximately 1.5m for all 38 towers. These works have the potential to interact with groundwater and create temporary pathways along which contaminants from construction works could pass. Potential pollutants including oils, hydrocarbons, inorganics, sulphates, sulphides, cement, concrete, waste, and wastewater associated with construction works would be present on Site. The potential impacts to groundwater receptors during construction include:
- Groundwater contamination from accidental spills;
 - Deterioration of groundwater quality from uncontrolled construction runoff; and
 - Lateral indirect migration of contaminants to surface water features and GWDTEs.
- 9.9.2 However, when considering the large scale of the Scottish Coal Measures Aquifer Group and Clackmannan Aquifer Group it is unlikely that if a contamination event were to occur it would impact the entire aquifer. Especially when considering the implementation of the embedded and standard mitigation.
- 9.9.3 Therefore, for the Scottish Coal Measures Aquifer Group and Clackmannan Aquifer Group (high importance) there is a temporary, direct, certain and short-term negligible impact resulting in a **slight adverse (not significant) effect**.

- 9.9.4 The Project predominantly overlies Glacial Till and peat. Glacial Till comprises gravel and sands that may store minor volumes of groundwater, but its clay matrix generally limits permeability. Peat is typically waterlogged. These conditions suggest that any superficial aquifers present are highly localised and discontinuous. Consequently, the dismantling of steel towers, which involves small, isolated foundation footprints would impact the groundwater quality. GI would confirm the extent of these deposits, but any potential contamination would be confined to a very small scale. Therefore, for the Superficial Deposits Aquifer (medium importance) there would also be a temporary, direct, uncertain and short-term negligible adverse impact which results in a **slight adverse (not significant) effect**.

Groundwater - Quantity

- 9.9.5 The dismantling of the CB Route would require excavations to the foundations of all 38 towers to enable the towers to be dismantled. There is limited groundwater level information throughout the Study Area, it is assumed that groundwater levels are likely to be shallow as a worst-case scenario. Where excavations would encounter the water table, dewatering and pumping may be required.
- 9.9.6 Due to small depths of the excavation (1.5m), groundwater flow and direction is unlikely to be impacted because of the relatively large size of all three aquifers. Dewatering would likely only cause a very small, temporary and localised change in groundwater flow direction. Therefore, for the Superficial Deposits Aquifer (medium importance) and the Scottish Coal Measures Aquifer Group and Clackmannan Aquifer Group (high importance), there is a temporary negligible adverse impact resulting in a **slight adverse (not significant) effect**.

Surface Water

- 9.9.7 The removal of the CB Route could result in fine sediment runoff and chemical pollution during excavation and ground reinstatement, posing potential risks to surface water quality. Table 9-23 considers the works that are proposed near each identified water feature including the predicted magnitude of impacts and the significance of the effects due to the removal of the overhead line.
- 9.9.8 Runoff from temporary trackways and works to remove CB Route infrastructure could result in short-term, temporary negligible adverse impacts on nearby surface water features, with contaminants potentially entering these watercourses both directly and indirectly. These risks are expected to remain minimal with the application of robust good-practice mitigation measures set out in the Standard Mitigation. The majority of temporary trackways referenced here are the same as those assessed for the WB route, but are included here again for consistency as these trackways will be used for both works.

Table 9-23 Impacts and Effects on Surface Water Quality During Construction of the CB Route Removal Overhead Line

Water Feature	Proximity to the works	Importance	Magnitude of Impact	Significance of Effect
Bonny Water / Red Burn	255m from CB039	High	Negligible adverse. Impacts direct, short-term,	Slight adverse (not significant)

			uncertain and temporary.	
BW-1	Close to multiple steel towers but nearest steel tower is 20m away (CB035)	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-4	Crossed by temporary trackways to CB Route	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-6	15m from CB028	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-7	35m from CB028	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-8	50m from CB026	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-10	22m from CB022	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-11	Crossed by Cr12. 35m from CB020	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-12	125m from CB014	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-13	5m from CB011	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-14	175m from CB007	Medium	Negligible adverse. Impacts direct, short-term,	Slight adverse (not significant)

			uncertain and temporary.	
BW-17	100m from CB026	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
River Carron	770m from CB039	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Forth and Clyde Canal	25m from CB037	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)

Hydromorphology

- 9.9.9 The Project includes the construction of temporary crossings for temporary trackways as described in ‘Watercourse Crossings’. There are also several components of the Project that are located within the recommended ‘Riparian Buffer Zones’. Watercourse crossings could involve some intrusive works which could physically impact the water features.
- 9.9.10 With the proposed embedded and standard mitigation measures the potential impacts to channel morphology from culverted temporary trackways crossings would result in a likely direct temporary and localised negligible adverse impact.
- 9.9.11 Table 9-24 lists the impacts and effects on hydromorphology for each of the relevant receptors.

Table 9-24 Impacts and Effects on Hydromorphology during construction of the CB Route Removal

Water Feature	Proximity to the Works	Importance	Magnitude of Impact	Significance of Effect
BW-1	Close to multiple steel towers but nearest steel tower is 20m away (CB035), and temporary watercourse crossing Cr9.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-7	35m from CB028.	Low	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Neutral (not significant)
BW-8	50m from CB026.	Low	Negligible adverse. Impacts direct, short-	Neutral (not significant)

			term, uncertain and temporary.	
BW-10	22m from CB022.	Low	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Neutral (not significant)
BW-11	One crossings Cr12. 35m from CB020.	Low	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Neutral (not significant)
BW-13	5m from CB011.	Low	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Neutral (not significant)
Forth and Clyde Canal	25m from CB037.	Low	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Neutral (not significant)

Summary of Significant Effects

- 9.9.12 There are no anticipated significant effects arising from the construction of the CB Route Removal and associated works on surface water or groundwater receptors.

Proposed Additional Mitigation Measures

Micro-siting of Moderate GWDTEs

- 9.9.13 Where GWDTEs of moderate importance have been identified, micro-siting is proposed for any works within the designated SEPA buffer zones for assessing GWDTEs to reduce potential impacts on groundwater quality and flows from affecting the GWDTE. The works this relates to including tower number is set out within Volume 3, Appendix 9.6 GWDTE Assessment.

Monitoring

Water Quality Monitoring Plan

- 9.9.14 During pre-construction and construction phases it is proposed to undertake water quality monitoring to ensure that mitigation measures are operating as planned and managing the risk of pollution of water features during works effectively and appropriate action is taken in line with the Emergency Response Plan. Monitoring will help to ensure that should pollution occur it is identified as quickly as possible and appropriate action is taken. A Water Quality Monitoring Plan and subsequent delivery of that monitoring, developed in consultation with SEPA and other relevant stakeholders, is proposed for any receptors considered at risk. BW-1, BW-4, BW-6, BW-7, BW-8, BW-10, BW-11, BW-12, BW-13, BW-14 and BW-17 should be considered for incorporation into the monitoring plan. As these receptors have been deemed to be at negligible impact and not significant risk, daily visual observations upstream and downstream of active works close to or discharging into these watercourses (increasing in frequency during storms) would likely be sufficient, if any monitoring is deemed necessary at all.

- 9.9.15 Due to the linear nature of the CB Route Removal, it may be sensible to phase the pre-construction monitoring, construction and post-construction monitoring depending on the construction timeline and surface water catchments.

Residual Effects

- 9.9.16 Table 9-25 presents a summary of the residual effects of the construction of the CB Route dismantling on the water quality and hydromorphology of surface water features and the quality and quantity of groundwater bodies.

Table 9-25 Summary of Effects: Construction

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
Clackmannan Aquifer Group	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Slight adverse	Not significant
	Groundwater Flows and Levels – Dewatering and Excavations	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Neutral	Not significant
Scottish Coal Measures Aquifer Group	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Neutral	Not significant
	Groundwater Flows and Levels – Dewatering and Excavations	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Neutral	Not significant
Superficial Aquifer	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	None required	Neutral	Not significant
	Groundwater Flows and Levels – Dewatering	Slight adverse (not significant)	None required	Neutral	Not significant

	and Excavations				
Bonny Water / Red Burn	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
BW-1	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	New temporary trackway crossing	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
BW-4	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
BW-6	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
BW-7	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Breach of riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
BW-8	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Breach of riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
BW-10	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Breach of riparian buffer zone (within 50m)	Neutral (not significant)	None Required	Slight adverse	Not Significant

	of foundation works)				
BW-11	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	New Temporary Trackway crossing	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
BW-12	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
BW-13	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
	Breach of riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant
BW-14	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
BW-17	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Slight adverse	Not Significant
River Carron	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
Forth and Clyde Canal	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
	Breach of riparian buffer zone (within 50m of foundation works)	Neutral (not significant)	None Required	Slight adverse	Not Significant

9.10 Assessment of Effects, Mitigation and Residual Effects of the AA Route Partial Undergrounding

Assessment of Construction Effects

Groundwater – Quality

- 9.10.1 The AA route undergrounding works will consist of two localised sections, the longest of which being 700m in length. The works will also consist of sealing ends and the removal of some towers. The works proposed for the underground cable including earthworks and excavations, have the potential expose the aquifers to potential pollutants. These works have the potential to interact with groundwater and create temporary pathways along which contaminants from construction works could pass. Potential pollutants including oils, hydrocarbons, inorganics, sulphates, sulphides, cement, concrete, waste, and wastewater associated with construction works would be present on Site. The potential impacts to groundwater receptors during construction include:
- Groundwater contamination from accidental spills; and
 - Deterioration of groundwater quality from uncontrolled construction runoff; and
 - Lateral indirect migration of contaminants to surface water features and GWDTEs.
- 9.10.2 However, these potential risks to groundwater quality would be reduced when implementing measures within the CEMP, standard mitigation and embedded mitigation. Therefore, for all groundwater receptors a certain and direct short-term, temporary negligible adverse impact is expected. Where the Superficial Aquifer (medium importance) and the Clackmannan Aquifer Group and Scottish Coal Measures Aquifer Group (high importance) are located this results in a **slight adverse (not significant) effect**.

Groundwater – Quantity

- 9.10.3 Dewatering activities are likely to result in some small changes in groundwater levels and flow directions within the superficial deposits and both bedrock aquifers. Across the Site, impacts are likely to occur to the superficial deposits present, many of which are anticipated to hold large amounts of groundwater (glaciofluvial deposits and alluvium in the north of the route and peat throughout), and others capable of holding small amounts of potentially perched groundwater (till located throughout the route). Groundwater held within the Superficial Deposits is likely to support the GWDTEs identified. Where dewatering activities take place small changes in groundwater levels and flow direction may occur, however due to the relatively small size of the underground cable route this is expected to be a direct, certain, short-term and temporary negligible adverse impact. On the medium importance receptors this results in a **slight adverse (not significant) effect**.
- 9.10.4 Groundwater is likely to be encountered where the bedrock aquifers (Clackmannan Aquifer Group and Scottish Coal Measures Aquifer Group) meet the superficial deposits (such as peat, alluvium and till). Some small changes to groundwater levels and flow directions are likely because of dewatering, the effects of which would be localised to areas where excavations reach the bedrock and water table. Across the underground cable the average depth of excavations for the open cut trenching works is expected to be

1.5m bgl and so the bedrock is only likely to be encountered where superficial deposits are thin. Considering the relatively large sizes of both the Clackmannan Aquifer Group and Scottish Coal Measures Aquifer Group, effects are anticipated to be direct, temporary, short-term and negligible adverse impact which results in a **slight adverse (not significant) effect** on the high importance receptors.

Surface Water

- 9.10.5 The proposed underground cable installation and works pose potential risks to surface water quality, primarily through fine sediment runoff and chemical pollutants resulting from excavation. Table 9-26 outlines the anticipated impacts for each identified water feature, including the predicted magnitude and significance of effects associated with these construction activities.
- 9.10.6 In summary, runoff from temporary trackways and undergrounding works could lead to short-term, temporary negligible adverse impacts to nearby surface water features, with contaminants potentially entering the water features both directly and indirectly. These risks are expected to remain minimal given the application of robust good-practice mitigation measures outlined within the Standard Mitigation.

Table 9-26 Impacts and Effects on Surface Water Quality During Construction of the AA Route Partial Undergrounding

Water Feature	Proximity to the works	Importance	Magnitude of Impact	Significance of Effect
Bonny Water / Red Burn	490m from AA001A.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-1	Crossed by AA Route corridor and 12m from AA001CSE	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-4	230m from AA002.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-6	Crossed by AA Route corridor and 14m from AA0009CSE.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
River Carron	660m from AA001A.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Forth and Clyde Canal	Crossed by AA Route corridor and 150m from AA001CSE	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)

Hydromorphology

- 9.10.7 For the intrusive open cut crossing of BW-1 (Rowan Tree Burn) for the underground cables there would be unavoidable short-term, temporary adverse impacts on the channel morphology, its riparian habitats, and the hydrological and sediment regimes during construction. With the proposed mitigation measures, including reinstatement of the channel as found, this would likely be a direct temporary and localised minor adverse impact.
- 9.10.8 Table 9-27 lists the impacts and effects on hydromorphology for each of the relevant receptors.

Table 9-27 Impacts and Effects on Hydromorphology during construction of the AA Route Partial Undergrounding

Water Feature	Proximity to the Works	Importance	Magnitude of Impact	Significance of Effect
BW-1	Crossed by AA Route corridor and 12m from AA001CSE	Medium	Minor adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-6	Crossed by AA Route corridor and 14m from AA0009CSE.	Low	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)

Summary of Significant Effects

- 9.10.9 There are no anticipated significant effects as a result of the construction of the AA Route Partial Undergrounding and associated works on surface water or groundwater receptors.

Proposed Additional Mitigation Measures

Micro-siting of Moderate GWDTEs

- 9.10.10 Where GWDTEs of moderate importance have been identified, micro-siting is proposed for any works within the designated SEPA buffer zones for assessing GWDTEs to reduce potential impacts on groundwater quality and flows from affecting the GWDTE. The works this relates to including tower number is set out within Volume 3, Appendix 9.6 GWDTE Assessment.

Reinstatement of Watercourses Following Open Cut Cable Installation

- 9.10.11 Where open cut crossing techniques are used, watercourses would be reinstated as found. A Pre-works Hydromorphological and Riparian Survey would be undertaken to provide the baseline against which reinstatement would be provided. Bank and bed sediments must be stored separately and in distinct layers as excavated on geotextile layers so they can be reinstated as found following completion of the works. The banks and the bed would need to be appropriately reprofiled with the inclusion of suitable geomorphic features to provide betterment on the original channel. Once the watercourses are reinstated, silt fences, geotextile matting or straw bales would be used initially to capture mobilised sediment until the watercourse was returned to a settled

state. Regular observations of the watercourses would be undertaken post-works during vegetation re-establishment of the banks, to ensure that no adverse impacts have occurred.

Monitoring

Water Quality Monitoring Plan

- 9.10.12 During pre-construction and construction phases it is proposed to undertake water quality monitoring to ensure that mitigation measures are operating as planned and managing the risk of pollution of water features during works effectively and appropriate action is taken in line with the Emergency Response Plan. Monitoring will help to ensure that should pollution occur it is identified as quickly as possible and appropriate action is taken. A Water Quality Monitoring Plan and subsequent delivery of that monitoring, developed in consultation with SEPA and other relevant stakeholders, is proposed for any receptors considered at risk. A Water Quality Monitoring Plan and subsequent delivery of that monitoring is proposed for any works directly impacting a water feature should be monitored before, during and after construction. BW-1 and BW-6 should be considered for incorporation into the monitoring plan. As these receptors have been deemed to be at negligible impact and not significant risk, daily visual observations upstream and downstream of active works close to or discharging into these watercourses (increasing in frequency during storms) would likely be sufficient, if any monitoring is deemed necessary at all.

Residual Effects

- 9.10.13 Table 9-28 Table 9-28 presents a summary of the residual effects of the construction of the AA Route Partial Undergrounding on the water quality and hydromorphology of surface water features and the quality and quantity of groundwater bodies.

Table 9-28 Summary of Effects: Construction

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
Clackmannan Aquifer Group	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	None required	Neutral	Not significant
	Groundwater Flows and Levels – Dewatering, Excavations and open cut trenches	Slight adverse (not significant)	None required	Neutral	Not significant
Scottish Coal Measures	Groundwater Quality - Excess Fine Sediments	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Neutral	Not significant

Aquifer Group	and Chemical Spillage Risk	significant)			
	Groundwater Flows and Levels – Dewatering, Excavations and open cut trenches	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Neutral	Not significant
Superficial Aquifer	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Neutral	Not significant
	Groundwater Flows and Levels – Dewatering, Excavations and open cut trenches	Slight adverse (not significant)	Micro-siting of moderate GWDTEs where present.	Neutral	Not significant
Bonny Water/Red Burn	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
BW-1	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Neutral	Not Significant
	Watercourse crossing by undergrounding	Slight adverse (not significant)	Pre-works Hydromorphological and Riparian Survey.	Neutral	Not Significant
BW-4	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	None Required	Slight adverse	Not Significant
BW-6	Accidental spillages and sediment-laden runoff	Slight adverse (not significant)	WMP and Water Quality Monitoring	Neutral	Not Significant
	Watercourse crossing by	Slight adverse	Pre-works Hydromorphologi	Neutral	Not Significant

	underground ing	(not significa nt)	cal and Riparian Survey.		
River Carron	Accidental spillages and sediment- laden runoff	Slight adverse (not significa nt)	None Required	Slight adverse	Not Significant
Forth and Clyde Canal	Accidental spillages and sediment- laden runoff	Slight adverse (not significa nt)	None Required	Slight adverse	Not Significant

9.11 Assessment of Effects, Mitigation and Residual Effects of the Cumbernauld Substation Extension

Assessment of Construction Effects

Groundwater Quality

- 9.11.1 The construction of the Project will require earthworks and excavations which have the potential to interact with groundwater and create temporary pathways along which contaminants from construction works could pass. The main excavation covers an area of 34,400m² i.e. 325 m by 150 m, and the northeast SuDS Pond will also require some excavation. Potential pollutants including oils, hydrocarbons, inorganics, sulphates, sulphides, cement, concrete, waste, and wastewater associated with construction works will be present on the site. The potential impacts to groundwater receptors during construction include:
- Groundwater contamination from accidental spills;
 - Deterioration of groundwater quality from uncontrolled construction runoff; and
 - Lateral indirect migration of contaminants to surface water features.
- 9.11.2 However, all these potential risks to groundwater quality will be reduced when implementing measures within the CEMP, standard mitigation and embedded mitigation. Additionally, the Clackmannan Group Aquifer is regionally extensive and relatively resilient to small-scale, short-term disturbances, particularly where no direct abstraction or recharge interference is expected. Therefore, for the High importance Clackmannan Group Aquifer a temporary, short-term, certain, direct negligible adverse impact, resulting in an overall Slight effect (not significant).
- 9.11.3 The Project is underlain by Glacial Till, which may exhibit some superficial aquifer characteristics. Consequently, while direct interference with a significant aquifer is unlikely, localised groundwater interactions could occur. Therefore, for the medium importance Superficial Aquifer a temporary, short-term, certain, direct, negligible adverse impact, resulting in an overall Slight effect (not significant).

Groundwater Quantity

- 9.11.4 As discussed, in Paragraph 9.4.25, groundwater is expected to occur at shallow depths, likely close to the ground surface. Although the exact excavation depth is unknown, a worst-case assumption is that excavations will intersect the water table, requiring dewatering measures. Dewatering may temporarily alter groundwater levels and redirect flow paths. However, with measurements outlined within Section 9.6, any impacts are expected to be short-term. With embedded and standard mitigation in place a temporary, short-lived, certain, direct, negligible, adverse impact resulting in an overall Slight effect (not significant) for both the medium importance Superficial Aquifer and the High importance Clackmannan Group Aquifer.

Surface Water

- 9.11.5 The potential impacts on surface water quality from the construction of the Project includes the potential for fine sediment run-off and chemical pollution. Table 9-29 considers the works that are proposed near each identified water feature including the predicted magnitude of impacts and the significance of the effects due to the construction of the Project.

Table 9-29 Impacts and Effects on Surface Water Quality

Water Feature	Proximity to Substation Extension	Importance	Magnitude of Impact	Significance of Effect
Glencryan Burn	200m southwest	High	Negligible adverse Impact The WFD waterbody is expected to experience a negligible Adverse impact. This is primarily due to the limited spatial extent of the works relative to the overall catchment area, the temporary nature of construction activities, and the implementation of standard mitigation measures such as surface water management, pollution prevention controls, and sustainable drainage systems (SuDS). While there may be short-term increases in sediment mobilisation or risk of accidental pollution events, these are expected to be localised and effectively managed through best practice construction methods.	Slight (not significant)
Bonny Water / Red Burn	130m northwest	High	Negligible adverse Impact The downstream WFD waterbody, located within the same river system as Glencryan Burn, is expected to experience a negligible Adverse Impact. Given the distance from the construction site of the main flow pathway and the dilution and dispersion capacity of the watercourse, any potential changes in water quality or flow regime are	Slight (not significant)

Water Feature	Proximity to Substation Extension	Importance	Magnitude of Impact	Significance of Effect
			anticipated to be minimal. Furthermore, the implementation of upstream mitigation measures will significantly reduce the risk of downstream transport of contaminants or increased runoff.	
BW-16	Partially within the Project	Medium	Minor adverse Impact This small drainage ditch, partially situated within the footprint of the proposed substation development, is expected to experience a minor adverse impact. Construction activities may temporarily alter flow patterns or introduce sediment, but these effects are expected to be localised and short-term. The implementation of standard mitigation measures will reduce the potential for pollutant transfer.	Slight (not significant)
BW-35	80m northwest	Medium	Negligible adverse Impact A small drainage channel located across the public road from the proposed substation development may be subject to negligible adverse impact, primarily due to potential surface water runoff from the temporary haul road. During construction, there is a risk of sediment transport, hydrocarbon contamination, and increased flow volumes entering the channel, particularly during rainfall events. However, the implementation of standard mitigation measures, will significantly reduce the potential for pollutant transfer.	Slight (not significant)

Hydromorphology

- 9.11.6 The Project includes the realignment of BW-16, as described within Section 9.5. This would require some intrusive works which could physically impact the ditch.
- 9.11.7 Both water features appear to be artificial drainage ditches or heavily modified channels, indicated by their straight alignment, uniform profile, and partially piped sections. Ecology surveys conducted on the 7 and 8 August 2025 recorded these channels as dry, suggesting they provide little to no sediment transport to the wider catchment.
- 9.11.8 Therefore, for the low importance receptor of BW-16 a permanent, long-term, certain, direct, negligible, adverse, impact is expected, which will result in an overall neutral Effect (not significant).

Flood Risk

- 9.11.9 Construction activity could affect flood risk around the Project by temporarily interrupting the functioning of any existing drainage, or by improper management of construction

runoff, causing surface water to cross catchments and discharge at higher rates than present. Where existing pluvial flood risk is present, this could be displaced by the substation extension. Changes in the flow paths and rates of surface water flow can impact flood risk on downstream receptors by increasing the intensity of flows and total flood volume.

- 9.11.10 Changes to the surface water runoff from the Project may impact flooding on Forest Road, which receives all surface water runoff leaving site in the baseline condition. Higher runoff rates could exacerbate the flood risk posed to this road, and to some core paths downstream. However, as these are Medium and Low importance receptors, and any impacts would likely be mitigated by following standard mitigation as previously outlined, there would be a temporary, direct, uncertain, and short-term slight adverse (not significant) effect.
- 9.11.11 Surface water runoff leaving the site also has the potential to impact the railway line which runs through the Red Burn Valley. This railway line is already at risk of flooding in the baseline situation. Improper surface water management on site could exacerbate this flood risk, which has economic impacts in the form of travel delays and damage to the infrastructure. However, as the impacts would likely be mitigated by standard mitigation, this would cause a temporary, direct, uncertain, and short-term slight adverse (not significant) effect.

Assessment of Operation Effects

Groundwater Quality

- 9.11.12 Contaminated run-off from the Project with the potential to leach into the underlying Superficial and Clackmannan Aquifer will be captured by the SuDS and treated before discharge. Therefore, with embedded and standard mitigation in place a permanent, short-lived, certain, direct, negligible, adverse impact resulting in an overall Slight effect (not significant) for both the medium importance Superficial Aquifer and the High important Clackmannan Aquifer.

Groundwater Quantity

- 9.11.13 Groundwater drainage would be integrated into the overall drainage design to maintain adequate drainage and preserve natural groundwater flow regimes.
- 9.11.14 The change in distribution of groundwater recharge locally is expected to be negligible in terms of its effect on groundwater levels and flows. As Superficial Groundwater is a medium importance receptor and Clackmannan Group Aquifer is a high importance receptor this results in a slight effect (not significant) on both receptors.

Surface Water

- 9.11.15 During operation, surface water run-off would be treated through filter drains and two SuDS ponds as described within Section 9.5. The western SuDS Pond would discharge into Glencryan Burn and the northeastern SuDS Pond would drain across the adjacent road and flow downhill to Red Burn via the existing drainage network.
- 9.11.16 The use of existing drainage infrastructure will help minimise direct impacts on nearby water features by maintaining established flow pathways and reducing the need for new

outfalls. In addition, the incorporation of filter drains and SuDS ponds will provide multiple stages of water quality treatment.

- 9.11.17 Therefore, for the High importance Glencryan Burn, a permanent, short-term, certain, direct negligible adverse impact resulting in an overall Slight effect (not significant) is predicted.

Hydromorphology

- 9.11.18 A new outlet is planned for Glencryan Burn. The exact dimensions will be confirmed during the detailed design stage. However, it is expected that the outlet will be relatively small compared to the overall size of the Glencryan Burn. Therefore, for the medium importance of Glencryan Burn a permanent, short-term, certain, direct negligible adverse impact resulting in an overall Slight effect (not significant) is predicted.
- 9.11.19 The Project includes the realignment of BW-16, as described within Section 9.5.. Both water features appear to be artificial drainage ditches or heavily modified channels, indicated by their straight alignment, uniform profile, and partially piped sections. As above, ecology surveys conducted on the 7 and 8 August 2025 recorded these channels as dry, suggesting they provide little or no sediment transport within the wider catchment. Consequently, the realignment is unlikely to result in significant long-term or permanent changes to catchment flow dynamics or hydromorphology. Additionally, during periods where the water level is higher, realignment would allow for continued water flow downstream. Therefore, with the embedded mitigation in place, for the low importance receptor BW-16, a permanent, long-term certain, direct, negligible, adverse impact is expected, which will result in an overall neutral Effect (not significant).

Flood Risk

- 9.11.20 Increase in flood risk due to site operation can arise from improper surface water management, which would increase discharge volumes and intensities from site. However, if the standard mitigations and surface water management strategy following guidance from the SuDS manual is followed, the discharge from site would be equivalent to the pre-development state. As a result, there would be a negligible adverse impact to the nearby core paths and the railway infrastructure, and a minor adverse impact to Forest Road. Given the importance levels assigned to each receptor, this would lead to a permanent, direct, uncertain and long-term slight adverse (not significant) impact on Forest Road, the railway line through the Red Burn valley, and the core paths downstream of site.

Summary of Significant Effects

- 9.11.21 No significant effects have been identified.

Proposed Additional Mitigation Measures

- 9.11.22 No additional mitigation measures are required as there are no significant effects.

Residual Effects

- 9.11.23 This assessment of water environment effects has been undertaken after the implementation of embedded and additional mitigation, during the construction and operational phases.

9.11.24 Table 9-30 summarises the construction impacts and Table 9-31 summarises the operation impacts.

Table 9-30 Summary of Predicted Construction Effects on the Water Environment

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
Clackmannan Group Aquifer	Water quality impacts from accidental spillages and sediment-laden runoff	Slight adverse (not significant)	Works to be controlled by a CEMP, WMP and any permissions required from the relevant authority.	Negligible	Slight Adverse (Not Significant)
	Changes to groundwater level and flow from dewatering	Slight adverse (not significant)	Works to be controlled by a CEMP, WMP and any permissions required from the relevant authority.	Negligible	Slight Adverse (Not Significant)
Superficial Aquifer	Water Quality Impacts from accidental spillages and sediment-laden runoff	Slight adverse (not significant)	Works to be controlled by a CEMP, WMP and any permissions required from the relevant authority.	Negligible	Slight Adverse (Not Significant)
	Changes to groundwater level and flow from dewatering	Slight adverse (not significant)	Works to be controlled by a CEMP, WMP and any permissions required from the relevant authority.	Negligible	Slight Adverse (Not Significant)
Glencryan Burn	Temporary deterioration of water quality due to construction activity (run off)	Slight adverse (not significant)	Works to be controlled by a CEMP, WMP and any permissions	Negligible	Slight Adverse (Not Significant)

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
			required from the relevant authority.		
Bonny Water / Red Burn	Temporary deterioration of water quality due to construction activity (run off)	Slight adverse (not significant)	Works to be controlled by a CEMP, WMP and any permissions required from the relevant authority.	Negligible	Slight Adverse (Not Significant)
BW-16	Partially removed and reconfigure by the works	Slight adverse (not significant)	Works to be controlled by a CEMP, WMP and any permissions required from the relevant authority.	Minor	Slight Adverse (Not Significant)
	Intrusive works impact hydromorphology	Slight adverse (not significant)	Works to be controlled by a CEMP, WMP and any permissions required from the relevant authority.	Minor	Slight Adverse (Not Significant)
BW-35	Temporary deterioration of water quality due to construction activity (run off)	Slight adverse (not significant)	Works to be controlled by a CEMP, WMP and any permissions required from the relevant authority.	Minor	Slight Adverse (Not Significant)
Forest Road	Unattenuated surface water flows leaving site, leading to increased flood risk	Slight adverse (not significant)	Works to be controlled by CEMP and Construction Surface	Minor	Slight Adverse (Not Significant)

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
			Water Management Plan.		
Nearby rail line	Unattenuated surface water flow leaving site, increasing flow in Red Burn	Slight adverse (not significant)	Works to be controlled by CEMP and Construction Surface Water Management Plan.	Negligible	Slight Adverse (Not Significant)
Core pathways	Unattenuated surface water flows leaving site, leading to increased flood risk	Slight adverse (not significant)	Works to be controlled by CEMP and Construction Surface Water Management Plan.	Minor	Slight Adverse (Not Significant)

Table 9-31 Summary of Predicted Operational Impacts on the Water Environment

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
Clackmannan Group Aquifer	Changes to groundwater level and flow from ongoing presence of the new platform.	Slight adverse (not significant)	Drainage Strategy	Negligible	Slight Adverse (Not Significant)
	Contaminated runoff from the platform	Slight adverse (not significant)	SuDS installed to treat runoff	Negligible	Slight Adverse (Not Significant)
Superficial Aquifer	Changes to groundwater level and flow from ongoing presence of the new platform.	Slight adverse (not significant)	Drainage Strategy	Negligible	Slight Adverse (Not Significant)
	Contaminated runoff from the platform	Slight adverse (not significant)	SuDS installed to treat runoff	Negligible	Slight Adverse

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
Glencryan Burn		significant)			(Not Significant)
	Contaminated runoff from the platform	Slight adverse (not significant)	SuDS installed to treat runoff	Negligible	Not Significant
	Changes to hydromorphology due to the installation of the new outlet	Slight adverse (not significant)	-	Negligible	Slight Adverse (Not Significant)
BW-16	Realignment	Slight adverse (not significant)	-	Minor	Slight Adverse (Not Significant)
Forest Road	Unattenuated surface water flow leaving site, increasing flow in Red Burn	Slight adverse (not significant)	Works to be controlled by Surface Water Management Strategy, attenuating increased runoff using SuDS.	Minor	Slight Adverse (Not Significant)
Nearby rail line	Unattenuated surface water flows leaving site, leading to increased flood risk	Slight adverse (not significant)	Works to be controlled by Surface Water Management Strategy, attenuating increased runoff using SuDS.	Negligible	Slight Adverse (Not Significant)
Core pathways	Changes to groundwater level and flow from ongoing presence of the new platform.	Slight adverse (not significant)	Works to be controlled by Surface Water Management Strategy, attenuating increased runoff using SuDS.	Minor	Slight Adverse (Not Significant)

9.12 Assessment of Effects, Mitigation and Residual Effects of the Proposed Denny North Substation Works

Assessment of Construction Effects

Groundwater Quality

- 9.12.1 The Proposed Denny North Substation Works would require excavations approximately 21m in length in the northeastern corner of the substation where the Denny North 400kV Reinforcement - span lengths enter the ground. New ZD steel towers are also to be located on either side of the Proposed Denny North Substation Works. These works have the potential to interact with groundwater and create temporary pathways along which contaminants from construction works could pass. Potential pollutants including oils, hydrocarbons, inorganics, sulphates, sulphides, cement, concrete, waste, and wastewater associated with construction works would be present on Site. The potential impacts to groundwater receptors during construction include:
- Groundwater contamination from accidental spills;
 - Deterioration of groundwater quality from uncontrolled construction runoff; and
 - Lateral indirect migration of contaminants to surface water features.
- 9.12.2 However, when considering the large scale of the Clackmannan Aquifer Group and the small scale of the works it is unlikely that if a contamination event were to occur it would impact the entire aquifer, especially when considering the implementation of the embedded and standard mitigation.
- 9.12.3 Therefore, for the Clackmannan Aquifer Group Aquifer (high importance) there is a temporary, direct, certain and short-term negligible impact resulting in a **slight (not significant) effect**.
- 9.12.4 The Project predominantly overlies Glacial Till and peat. Glacial Till comprises gravel and sands that may store minor volumes of groundwater, but its clay matrix generally limits permeability. Peat is typically waterlogged. These conditions suggest that any superficial aquifers present are highly localised and discontinuous. Consequently, any excavations may impact groundwater quality. GI indicated that shallow groundwater is present within the superficial deposits, and further GI would confirm the extent of these deposits, but any potential contamination would be confined to a very small scale. Therefore, for the Superficial Deposits Aquifer (medium importance) there would be a temporary, direct, uncertain and short-term negligible adverse impact which results in a **slight (not significant) effect**.

Groundwater Quantity

- 9.12.5 The Proposed Denny North Substation Works and associated ZD steel tower construction would require small amounts of excavations. There is limited groundwater level information throughout the Study Area, it is assumed that groundwater levels are likely to be shallow as a worst-case scenario, as supported by BGS boreholes listed in 'Groundwater Levels' which suggests that shallow groundwater is present. Where excavations would encounter the water table, dewatering and pumping may be required. Due to the small area of the excavation works, groundwater flow and direction are unlikely

to be impacted due to the relatively large size of both aquifers. Dewatering would likely only cause a very small, temporary and localised change in groundwater flow direction. Therefore, for the Superficial Deposits Aquifer (medium importance) and the Clackmannan Aquifer Group (high importance), there is a temporary negligible adverse impact resulting in a **slight (not significant) effect**.

Surface Water

- 9.12.6 The potential impacts on surface water quality from the construction of the Proposed Denny North Substation Works and the erection of the new ZD steel towers include the potential for fine sediment runoff and chemical pollution. Sediment-laden runoff may occur during earthworks for the substation platform and construction of the SuDS, particularly in periods of heavy rainfall, leading to increased turbidity and potential smothering of aquatic habitats downstream. Chemical pollution could arise from accidental spills or leaks of fuels, oils, and other construction-related substances, which may enter PB-4, RC1-1 or RC1-2 and propagate downstream to Pow Burn / Tor Burn or River Carron.
- 9.12.7 However, with the standard mitigation and best practices in place the likely level of impact to all the surface water receptors would likely be negligible adverse impact which would only be temporary, direct, uncertain and short-term during the construction phase. This results in a **slight (not significant) effect** for PB-4, RC1-1 and RC1-2.

Hydromorphology

- 9.12.8 The Proposed Denny North Substation Works do not encroach any of the Riparian Buffer Zones described in 'Riparian Buffer Zones'. Therefore, the proposed works are unlikely to impact the nearby watercourses and their morphology. Therefore, no impact is predicted for these watercourses, resulting in a **neutral (not significant) effect**.

Flood Risk

- 9.12.9 Construction activity could affect flood risk at the Denny North Substation Works by temporarily interrupting the functioning of the existing drainage network, causing surface water to cross catchments and discharge at higher rates than present. Where existing pluvial flooding is present, this could be displaced by the substation extension. Changes in the paths and flow rates of surface water can impact flood risk to downstream receptors.
- 9.12.10 If standard mitigation is followed, including the proposed surface water management strategy, there would be a temporary, indirect, uncertain and short-term negligible adverse impact on the Langlard's Farm and Doghillock Farm receptors as they are located at approximately 500m north and 600m southwest respectively from the Project. Given the medium importance of these receptors, the effect would be **slight (not significant)**.
- 9.12.11 Construction activities could temporarily increase surface water runoff to the unnamed watercourse RC1-2 which is a tributary of the River Carron. This watercourse has potential to burst its banks and flood some minor local roads within 1km downstream of the Site. Due to the small size of the watercourse and rural nature of the channel corridor, with a low importance, a temporary indirect, uncertain and short-term minor adverse impact is anticipated, causing a **slight (not significant) effect**.

Assessment of Operation Effects

Groundwater Quantity

- 9.12.12 The Denny North Substation Works would result in an increased platform area. This may impound groundwater flows where the extension is present and impact flow within the area. However, considering the large size of the groundwater receptors and the small scale of the works, the impact is expected to be no change which results in a **neutral (not significant) effect** for all receptors.

Surface Water and Groundwater Quality

- 9.12.13 Potential impacts on surface water quality from the operation of the Proposed Denny North Substation Works includes the potential for fine sediment runoff and chemical pollution from the operation of the substation. Chemical pollution could arise from accidental spills or from sediment-laden runoff, which may enter PB-4 or RC1-1 and propagate downstream to Pow Burn / Tor Burn or River Carron. Contamination could also eventually infiltrate shallow groundwater.
- 9.12.14 However, as discussed within Section 9.5.21 contaminated runoff would be treated through a filter drain and swale. Volume 3, Appendix 9.4 describes these mitigations in further detail. A Simple Index Approach (SIA) has been carried out within Volume 3, Appendix 9.4 and shows that a filter drain and swale provide sufficient pollution mitigation based on the SIA mitigation requirement. Therefore, for all surface water receptors there would likely be a temporary, indirect, uncertain and short-term negligible adverse impact during the operation phase. This results in a **slight (not significant) effect** for both PB-4 and RC1-1. For the Superficial Deposits Aquifer (medium importance) and the Clackmannan Aquifer Group (high importance), there is a temporary, direct, certain, short-term negligible adverse impact resulting in a **slight (not significant) effect**.

Hydromorphology

- 9.12.15 The Proposed Denny North Substation Works do not encroach any of the Riparian Buffer Zones described in 'Riparian Buffer Zones'. Therefore, the proposed works are unlikely to impact the nearby watercourses and their morphology. Therefore, no impact is predicted, resulting in a **neutral (not significant) effect** for the low importance water feature RC1-2.

Flood Risk

- 9.12.16 Increase in flood risk due to site operation can arise from improper surface water management on site, which would increase discharge volumes and intensities from site. However, if the standard mitigations and surface water management strategy is followed, the discharge intensity from site would be reduced below the pre-development state following Falkirk Council guidance. As a result, there would be a negligible beneficial impact to all nearby receptors. Given the importance levels assigned to each receptor, this would lead to a permanent, indirect, uncertain and long-term **neutral (not significant) impact** on Langlard's Farm, Dockhillock Farm, and local minor roads within 1km of the site.

Summary of Significant Effects

- 9.12.17 There are no anticipated significant effects as a result of the operation of the Proposed Denny North Substation Works and associated works on groundwater and surface water receptors.

Proposed Additional Mitigation Measures

- 9.12.18 No additional mitigation measures are required as there are no identified significant effects.

Residual Effects

- 9.12.19 No additional mitigation is proposed here and so the residual effects of the construction and operation of the Proposed Denny North Substation Works on the water quality and hydromorphology of surface water features and the quality and quantity of groundwater bodies are deemed neutral and are not significant.

9.13 Assessment of Effects, Mitigation and Residual Effects of the Bonnybridge Substation Extension

Assessment of Construction Effects

Groundwater - Quality

- 9.13.1 Small amounts of earthworks spanning a length of approximately 460m would be required for the Bonnybridge Substation Extension's SuDS, platform edge and flat-top kerb. Current information suggests that earthworks would consist of insert and not exert, however in the case excavations to depth are required these works would have the potential to interact with groundwater and create temporary pathways along which contaminants from construction works could pass. Potential pollutants including oils, hydrocarbons, inorganics, sulphates, sulphides, cement, concrete, waste, and wastewater associated with construction works would be present on Site. The potential impacts to groundwater receptors during construction include:
- Groundwater contamination from accidental spills;
 - Deterioration of groundwater quality from uncontrolled construction runoff;
 - Lateral indirect migration of contaminants to surface water features; and
 - The ingress of groundwater into the SuDS Pond if an impermeable liner is not used.
- 9.13.2 However, when considering the large scale of the Scottish Coal Measures Aquifer Group and the small scale of the works it is unlikely that if a contamination event were to occur it would impact the entire aquifer. Especially when considering the implementation of the embedded and standard mitigation.
- 9.13.3 Therefore, for the Scottish Coal Measures Aquifer Group (high importance) there is a temporary, direct, certain and short-term negligible impact resulting in a **slight adverse (not significant) effect**.
- 9.13.4 Bonnybridge Substation is primarily situated on top of raised marine deposits which comprise of gravel, sand, silt, and clay with organic debris present. These deposits are not

likely to be productive, as thick clay beds are common, however gravels beds within the deposit could be highly permeable forming a perched aquifer. These conditions suggest that any superficial aquifers present are highly localised and discontinuous.

Consequently, any excavations may impact groundwater quality. GI would confirm the extent of these deposits, but any potential contamination would be confined to a very small scale. Therefore, for the Superficial Deposits Aquifer (medium importance) there would also be a temporary, direct, uncertain and short-term negligible adverse impact which results in a **slight (not significant) effect**.

Groundwater-Quantity

- 9.13.5 The Bonnybridge Substation Extension would require small amounts of excavations. There is limited groundwater level information throughout the Study Area, and so it is assumed that groundwater levels are likely to be shallow as a worst-case scenario. Where excavations would encounter the water table, dewatering and pumping may be required. Due to small area of the excavation works, groundwater flow and direction is unlikely to be impacted as a result of the relatively large size of both aquifers. Dewatering would likely only cause a very small, temporary and localised change in groundwater flow direction. Therefore, for the Superficial Deposits Aquifer (medium importance) and the Scottish Coal Measures Aquifer Group (high importance), there is a temporary negligible adverse impact resulting in a **slight (not significant) effect**.

Surface Water

- 9.13.6 The potential impacts on surface water quality from the construction of the Bonnybridge Substation Extension include the potential for fine sediment runoff and chemical pollution. Sediment-laden runoff may occur during the construction of the earthworks for the substation platform and construction of the SuDS pond, particularly in periods of heavy rainfall, leading to increased turbidity and potential smothering of aquatic habitats downstream. Chemical pollution could arise from accidental spills or leaks of fuels, oils, and other construction-related substances, which may enter BW-1 or BW-3 and propagate downstream into Bonny Water / Red Burn and subsequently the River Carron.
- 9.13.7 However, with the standard mitigation and best practices in place, there would likely be temporary, indirect and uncertain negligible adverse impacts on all surface water receptors which would only be temporary during the construction phase. This results in a **slight (not significant) effect** for both the high importance receptors Bonny Water / Red Burn and the River Carron, and for the medium importance receptors BW-1 and BW-3.

Hydromorphology

- 9.13.8 The only breach of the required Riparian Buffer Zones is to BW-3, where a new outfall would be constructed. This would require some intrusive works which could physically impact the ditch.
- 9.13.9 The water feature appears to be artificial drainage ditches or heavily modified channels, indicated by their straight alignment and uniform profile. Therefore, for NW-3, a low importance receptor, a permanent, long-term certain, direct negligible adverse Impact is expected, which would result in an overall **neutral (not significant) effect**.

Flood Risk

- 9.13.10 Construction activity could affect flood risk at the Bonnybridge Substation Extension by temporarily interrupting the functioning of any existing drainage or improper management of construction runoff, causing surface water to cross catchments and discharge at higher rates than present. Where existing pluvial flooding is present, this could be displaced by the substation extension. Changes in the flow paths and rates of surface water can impact flood risk on downstream receptors by increasing the intensity of flows and total flood volume.
- 9.13.11 Changes to the surface water runoff from Site can also impact the flooding response of the Bonny Water, which collects these surface water flows. A recycling centre and wastewater treatment works (WWTW) are located adjacent to the Bonny Water within 1km of the substation and thus could be affected by an increase in runoff from the Project. However, the size of the Project compared to the size of the Bonny Water catchment indicates that there would only be negligible adverse impacts on the Bonny Water and thus on adjacent developments such as the recycling centre and WWTW, and downstream road and rail infrastructure. Based on the importance values of these receptors, this would lead to a temporary, indirect, uncertain and short-term **slight adverse (not significant) effect** on the high importance road infrastructure, recycling works, and WWTW, and a temporary, slight adverse effect on the medium importance domestic and commercial developments which border the Bonny Water.

Assessment of Operation Effects

Groundwater Quantity

- 9.13.12 The Bonnybridge Substation Extension would result in an increased platform area. This may impound groundwater flows where the extension is present effect flow within the area. However, considering the large size of the groundwater receptors and the small scale of the works, the impact is expected to be no change which results in **a neutral (not significant) effect** for all receptors.

Surface Water and Groundwater Quality

- 9.13.13 During operation, water runoff would be treated via a filter drain and a new SuDS Pond located to the north of the Site. Water would be discharged into BW-3 and BW-1.
- 9.13.14 The potential impacts on surface water quality from the operation of the Bonnybridge Substation Extension include the potential for fine sediment runoff and chemical pollution from the permanent access tracks used for maintenance and operation of the substation. Chemical pollution could arise from accidental spills or leaks during the operation, which may enter BW-1 or BW-3 and propagate downstream into Bonny Water / Red Burn and subsequently the River Carron. This could also potentially infiltrate shallow groundwater aquifers.
- 9.13.15 However, as discussed within Section 9.5.21 contaminated runoff would be treated through a filter drain and swale. Volume 3, Appendix 9.4 describes these mitigations in further detail. A SIA has been carried out within Volume 3, Appendix 9.4 and shows that a filter drain and swale exceed the pollution mitigation requirement. Therefore, for all surface water receptors there would likely be a temporary, indirect, uncertain and short-

term negligible adverse impact during the operation phase. This results in a **slight adverse (not significant) effect** for the high importance receptors Bonny Water / Red Burn and the River Carron, and for the medium importance receptors (BW-1 and BW-3) a **slight adverse (not significant) effect**. For the Superficial Deposits Aquifer (medium importance) and the Scottish Coal Measures Aquifer Group (high importance), there is a temporary, direct, certain and short-term negligible adverse impact resulting in a **slight adverse (not significant) effect**.

Hydromorphology

- 9.13.16 A new outlet is planned for BW-3 as described in Section 9.5.21. The exact dimensions would be confirmed during the detailed design stage. However, it is expected that the outlet would be relatively small compared to the overall size of BW-3. Therefore, for the low importance BW-3 a permanent, long-term certain, direct negligible adverse impact resulting in an overall **neutral (not significant)** is predicted.

Flood Risk

- 9.13.17 Increase in flood risk due to site operation can arise from improper surface water management on site, which would increase discharge volumes and intensities from site. However, if the standard mitigations and surface water management strategy is followed, there would be a direct, uncertain and long-term negligible beneficial impact on all downstream receptors, as Falkirk Council policy requires that surface water discharge from site be reduced below the predevelopment rate. This would generate direct, uncertain, long-term **slight beneficial (not significant) effect** to the high importance recycling centre, WWTW, and road infrastructure receptors, and a direct, uncertain, long-term **slight beneficial (not significant)** to the medium importance residential and commercial properties downstream.

Summary of Significant Effects

- 9.13.18 There are no anticipated significant effects as a result of the construction or operation of the Bonnybridge Substation Extension on groundwater and surface water receptors.

Proposed Additional Mitigation Measures

- 9.13.19 No additional mitigation measures are required as there are no identified significant effects.

Monitoring

Water Quality Monitoring Plan

- 9.13.20 During pre-construction and construction phases it is proposed to undertake water quality monitoring to ensure that mitigation measures are operating as planned and managing the risk of pollution of water features during works effectively and appropriate action is taken in line with the Emergency Response Plan. Monitoring will help to ensure that should pollution occur it is identified as quickly as possible and appropriate action is taken. A Water Quality Monitoring Plan and subsequent delivery of that monitoring, developed in consultation with SEPA and other relevant stakeholders, is proposed for any receptors considered at risk. BW-3 should be considered for incorporation to the monitoring plan. As these receptors have been deemed to be at negligible impact and not significant risk, daily visual observations upstream and downstream of active works close to or discharging into

these watercourses (increasing in frequency during storms) would likely be sufficient, if any monitoring is deemed necessary at all.

Residual Effects

- 9.13.21 No additional mitigation is proposed here and so the residual effects of the construction and operation of the Bonnybridge Substation Extension on the water quality and hydromorphology of surface water features and the quality and quantity of groundwater features are deemed neutral and are not significant.

9.14 Assessment of Effects, Mitigation and Residual Effects of the Wishaw Substation Extension

Assessment of Construction Effects

Groundwater - Quality

- 9.14.1 The Wishaw Substation Extension would require earthworks of a linear area of approximately 380m along the existing substation. Where these works encounter groundwater, it could create temporary pathways along which contaminants from construction works could pass. Potential pollutants including oils, hydrocarbons, inorganics, sulphates, sulphides, cement, concrete, waste, and wastewater associated with construction works would be present on Site. The potential impacts to groundwater receptors during construction include:
- Groundwater contamination from accidental spills; and
 - Deterioration of groundwater quality from uncontrolled construction runoff; and
 - Lateral indirect migration of contaminants to surface water features.
- 9.14.2 However, when considering the large scale of the Scottish Coal Measures Aquifer Group and the small scale of the works it is unlikely that if a contamination event were to occur it would impact the entire aquifer. Especially when considering the implementation of the embedded and standard mitigation.
- 9.14.3 Therefore, for the Clackmannan Aquifer Group (high importance) there is a temporary, direct, certain and short-term negligible impact resulting in a **slight adverse (not significant) effect**.
- 9.14.4 The Project predominantly overlies Glacial Till and peat. Glacial Till comprises gravel and sands that may store minor volumes of groundwater, but its clay matrix generally limits permeability. Peat is typically waterlogged. These conditions suggest that any superficial aquifers present are highly localised and discontinuous. Consequently, any excavations may impact groundwater quality. GI indicated that shallow groundwater is present within the superficial deposits, and further GI would confirm the extent of these deposits, but any potential contamination would be confined to a very small scale. Therefore, for the Superficial Deposits Aquifer (medium importance) there would also be a temporary, direct, uncertain and short-term negligible adverse impact which results in a **slight adverse (not significant) effect**.

Groundwater - Quantity

- 9.14.5 Small amounts of earthworks would be required for the Wishaw Substation Extension. As described within Section 9.4.24, there is some groundwater level data which showed one borehole as having a groundwater level of 6.4m bgl which then rose to 3m bgl, but other boreholes of depths of 13m to 29.5m as described in Section 9.4.24 were recorded as dry. This suggests small amounts of perched groundwater may be encountered within the permeable layers of the superficial deposits. Therefore, groundwater within the superficial deposits may be encountered during earthworks, for which dewatering and pumping may be required. However, as the superficial deposits would hold only small amounts of groundwater and considering the small size of the earthworks, a temporary, direct, certain and short-term negligible adverse impact is anticipated on groundwater levels and flow within the medium importance superficial deposits aquifer. This results in a **slight (not significant) effect**.
- 9.14.6 In the case bedrock is reached during excavations, the relatively deep groundwater within the area and the small nature of the excavations suggests that it is unlikely groundwater within the Scottish Coal Measures would be reached. However, as the groundwater data is limited there is the chance that groundwater will still be encountered. It is also possible that works would impact water within the superficial deposits, which may be hydraulically connected to groundwater within the bedrock. Overall, a negligible, short-term and indirect impact is expected. On the high importance aquifer this results in a **slight adverse (not significant) effect**.

Surface Water

- 9.14.7 The potential impacts on surface water quality from the construction of the Wishaw Substation Extension includes the potential for fine sediment runoff and chemical pollution. Sediment-laden runoff may occur during earthworks for the substation platform, particularly in periods of heavy rainfall, leading to increased turbidity and potential smothering of aquatic habitats downstream. Chemical pollution could arise from accidental spills or leaks of fuels, oils, and other construction-related substances, which may enter Catchment 17-1 and Catchment 17-2 via surface drainage pathways. If uncontrolled, these pollutants could degrade water quality, affect ecological receptors, and compromise compliance with Water Framework Directive objectives. However, with the implementation of embedded and standard mitigation measures and strict adherence to the CEMP the magnitude of impact is likely to be direct, uncertain and short-term negligible adverse to the medium importance Catchment 17-1 and Catchment 17-2, resulting in an overall **slight adverse (not significant) effect**. As a receptor of these two water features, the River Clyde has also been assessed. It has been assigned a very high importance, but the magnitude of impact is likely to be direct, uncertain and short-term negligible adverse, resulting in an overall **slight adverse (not significant) effect**.

Flood Risk

- 9.14.8 Construction activity could affect the flood risk at Wishaw Substation Extension by temporarily interrupting the functioning of the existing drainage network, causing surface water to cross catchments and discharge at higher rates than present. Where existing pluvial flooding is present, this could be displaced by the substation extension. Changes in the paths and flow rates of surface water can impact flood risk to nearby receptors. This

is a particular risk during the construction of the earthworks, which has the potential to mobilise sediment which can block drainage systems.

- 9.14.9 The Wishaw Substation Extension has the potential to displace areas of pluvial flooding on the south and eastern sides of the existing platform. Due to the topography, this could potentially increase pluvial flooding to roads and properties to the south and west of the Project.
- 9.14.10 However, if standard mitigation and good construction practice is followed, including the proposed surface water management strategy, then there would be temporary, direct, uncertain and short-term negligible adverse impacts on residential, commercial, road and rail infrastructure within 1km. Based on the importance values of each receptor, this would cause **slight (not significant) adverse impact** on high importance road and rail infrastructure, and **slight (not significant) adverse impact** on medium importance commercial and residential developments.

Assessment of Operation Effects

Groundwater Quantity

- 9.14.11 The Wishaw Substation Extension would result in an increased platform area. This may impound groundwater flows where the extension is present effect flow within the area. However, considering the large size of the groundwater receptors and the small scale of the works, the impact is expected to be no change which results in a **neutral (not significant) effect** for all receptors.

Surface Water and Groundwater Quality

- 9.14.12 The potential impacts on surface water quality from the operation of the Wishaw Substation Extension includes the potential for fine sediment runoff and chemical pollution from the permanent access tracks used for maintenance and operation of the substation. Chemical pollution could arise from accidental spills or leaks during the operation, which may enter Catchment 17-1 and Catchment 17-2. This could also potentially infiltrate into shallow groundwater aquifers.
- 9.14.13 However, as discussed within the Section 9.5.21 contaminated runoff would be treated through a filter drain and swale. Volume 3, Appendix 9.4 describes these mitigations in further detail. A SIA has been carried out within Volume 3, Appendix 9.4 and show that a filter drain and swale exceed the pollution mitigation requirement. Therefore, for all surface water receptors there would likely be negligible adverse impact during the operation phase. Therefore, the impact to Catchment 17-1 and Catchment 17-2 would be similar to the current conditions. Therefore, the magnitude of impact is likely to be direct, uncertain and short-term negligible adverse to the medium importance Catchment 17-1 and Catchment 17-2, resulting in an overall **slight adverse (not significant) effect**. For the Superficial Deposits Aquifer (medium importance) and the Scottish Coal Measures Aquifer Group (high importance), there is a temporary, direct, certain and short-term negligible adverse impact resulting in a **slight effect (not significant) effect**.

Flood Risk

- 9.14.14 Increase in flood risk due to site operation can arise from improper surface water management on site, which would increase discharge volumes and intensities from site.

However, if the standard mitigations and surface water management strategy is followed, there would be direct, uncertain and long-term negligible **adverse** impacts on all downstream receptors as the discharge from site would be controlled to the greenfield (pre-development) runoff rate. This corresponds to **slight (not significant) adverse effects** on **high importance** road and rail infrastructure, and **slight (not significant) adverse effects** on **medium importance** commercial and residential developments.

Summary of Significant Effects

- 9.14.15 There are no anticipated significant effects as a result of the construction and operation of the Wishaw Substation Extension and associated works on groundwater and surface water receptors.

Proposed Additional Mitigation Measures

- 9.14.16 No additional mitigation or monitoring measures are required as there are no identified significant effects.

Residual Effects

- 9.14.17 No additional mitigation is proposed here and so the residual effects of the construction and operation of the Wishaw Substation Extension on the water quality and hydromorphology of surface water features and the quality and quantity of groundwater bodies are deemed either slight adverse or neutral and are not significant.

9.15 Assessment of Effects, Mitigation and Residual Effects of the Distribution Line Diversion Works

Assessment of Construction Effects

Groundwater - Quality

- 9.15.1 The works proposed for the Distribution Line Diversion would consist of a number of temporary and permanent underground cables which would require works such as earthworks and excavations, which have the potential expose the aquifers to potential pollutants. These works have the potential to interact with groundwater and create pathways along which contaminants from construction works could pass. Potential pollutants including oils, hydrocarbons, inorganics, sulphates, sulphides, cement, concrete, waste, and wastewater associated with construction works would be present on Site. The potential impacts to groundwater receptors during construction include:
- Groundwater contamination from accidental spills;
 - Deterioration of groundwater quality from uncontrolled construction runoff; and
 - Lateral indirect migration of contaminants to surface water features and potential GWDTEs.
- 9.15.2 It is possible that subject to GI, horizontal directional drilling (HDD) will be required for watercourse crossings. Where HDD occurs, there may be a greater potential risk of the accidental surface spillage and subsurface 'frac-out' of drilling fluids as a result of excessive drilling pressures.

- 9.15.3 However, all of these potential risks to groundwater quality would be reduced when implementing measures within the CEMP, standard mitigation and embedded mitigation. Therefore, for all groundwater receptors a temporary, certain, direct and short-term negligible adverse impact is expected. Where the Superficial Aquifer (medium importance) and the Clackmannan Aquifer Group and Scottish Coal Measures Aquifer Group (high importance) are located this results in a **slight adverse (not significant) effect**.

Groundwater – Quantity

- 9.15.4 Dewatering activities where groundwater is encountered is likely to result in some small changes in groundwater levels and flow directions within the superficial deposits, predominantly Glacial Till and peat. Glacial Till comprises gravel and sands that may store minor volumes of groundwater, but its clay matrix generally limits permeability. Peat is typically waterlogged. These conditions suggest that any superficial aquifers present are highly localised and discontinuous. Where glaciofluvial deposits and alluvium are present large amounts of groundwater may be encountered. Groundwater held within the Superficial Deposits is likely to support any GWDTEs.
- 9.15.5 It is possible that HDD will be required for watercourse crossings. In this case where HDD occurs, this could potentially temporarily impact the surrounding groundwater flow and levels of the underlying aquifer. Other activities that may impact levels and flow are where dewatering activities take place, which could cause small changes in groundwater levels and flow direction, the severity of which would vary between less impact where clays (and therefore less groundwater) are present and more impact in areas where sand and gravel are present. However, due to the relatively small size of the temporary underground cables and with standard and embedded mitigation, this is expected to be a temporary, direct, certain and short-term negligible adverse impact on groundwater levels and flow. On the medium importance receptors this results in a **slight adverse (not significant) effect**.
- 9.15.6 Within the moderately productive Clackmannan Aquifer Group and Scottish Coal Measures Aquifer Group groundwater is unlikely to be encountered both within the bedrock as the underground cables are very likely situated within the superficial deposits only. Therefore, the impacts on the Clackmannan Aquifer Group and Scottish Coal Measures Aquifer Group are anticipated to be a no change impact which results in a **neutral (not significant) effect** on the high importance receptors. Any HDD works impacting the high importance receptors would have the same negligible impact as assessed above for the medium importance receptors, resulting in a **slight adverse (not significant) effect**.

Surface Water

- 9.15.7 The Distribution Line Diversion works involve some undergrounding of cables in proximity to surface water features and this poses potential risks to surface water quality, primarily through fine sediment runoff and chemical pollutants resulting from excavation. Table 9-32 outlines the anticipated impacts for each identified water feature, including the predicted magnitude and significance of effects associated with these construction activities.

9.15.8 The impacts and effects assessed could lead to short-term, direct and uncertain temporary negligible adverse impacts to most nearby surface water features, with contaminants potentially entering the water features both directly and indirectly. Several watercourses are to be crossed by the Distribution Line Diversion. For some – Forth and Clyde Canal, RC2-7 and BW-14 – the cable is to be laid on the existing bridges over these watercourses and so, with standard pollution prevent controls in place, the magnitude of impact is deemed to be negligible. These risks are expected to remain minimal given the application of robust good-practice mitigation measures outlined within the Standard Mitigation. This results in a **slight adverse (not significant) effect** for most water features.

9.15.9 A small number of watercourses – BW-9, BW-27, LW-4 and SB-12 – are to have cable laid beneath them. In these cases, the following procedure is to be followed to mitigate the impacts on the surface water quality:

1. **Damming/Isolation:** A temporary dam or cofferdam (such as an inflatable water-filled dam or an A-frame structure with a tailored membrane) is installed upstream and often downstream of the work area to create an isolated section.
2. **Over Pumping (Flow Bypass):** A high-capacity pumping system is then used to transfer the water from the upstream side to the downstream side, bypassing the isolated dry work area.
3. **Laying Ducts:** Once the area is dry, an excavation can safely take place, and the required ducting (e.g., for utility cables, foul or surface water pipes) can be laid in the ground.

These mitigations result in direct, short-term, certain and temporary minor adverse impacts, with **slight adverse (not significant) effects**.

9.15.10 One additional water feature – AW (Auchter Water) – is also to have cable laid beneath it and the magnitude of impacts for this are found to be direct, short-term, uncertain and temporary minor adverse. Due to the high importance of this watercourse, were the above procedure to be followed there would be a resulting **moderate adverse (significant) effect**.

Table 9-32 Impacts and Effects on Surface Water Quality during construction of the Distribution Line Diversion

Water Feature	Proximity to the works	Importance	Magnitude of Impact	Significance of Effect
Bonny Water / Red Burn	47m from WB Proposed 33kV UG Cable 1.	High	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Forth and Clyde Canal	Crossed by WB Proposed 33kV UG Cable 3.	High	Negligible adverse. Impacts direct, short-term, certain and temporary.	Slight adverse (not significant)
RC2-4	40m from WB Proposed 11kV UG Cable 14.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)

RC2-7	Crossed by WB Proposed 33kV UG Cable 3.	Medium	Negligible adverse. Impacts direct, short-term, certain and temporary.	Slight adverse (not significant)
BW-6	25m from WB Proposed 11kV UG Cable 7.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-9	Crossed by WB Proposed 11kV UG Cable 8.	Medium	Minor adverse. Impacts direct, short-term, certain and temporary.	Slight adverse (not significant)
BW-12	18m from WB Proposed 11kV UG Cable 15.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-14	Crossed by WB Proposed 33kV UG Cable 7.	Medium	Negligible adverse. Impacts direct, short-term, certain and temporary.	Slight adverse (not significant)
BW-15	6m from WB Proposed 33kV UG Cable 9.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-24	8m from WB Proposed 11kV UG Cable 9.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-26	18m from WB Proposed 33kV UG Cable 7.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-27	Crossed by WB Proposed 33kV UG Cable 9.	Medium	Minor adverse. Impacts direct, short-term, certain and temporary.	Slight adverse (not significant)
LW-4	Crossed by WB Proposed 11kV UG Cable 6.	Medium	Minor adverse. Impacts direct, short-term, certain and temporary.	Slight adverse (not significant)
LW-15	38m from WB Proposed 33kV UG Cable 10.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Catchment 19-1	6m from XX Proposed 33kV UG Cable 3.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)

Catchment 19-2	11m from XX Proposed 33kV UG Cable 5.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Catchment 19-3	31 m from XX Proposed 33kV UG Cable 3.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SB-3	44m from XX Proposed 11kV UG Cable 4.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SB-10	5m from XX Proposed 11kV UG Cable 3.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SB-12	Crossed by XX Proposed LV UG Cable 1.	Medium	Minor adverse. Impacts direct, short-term, certain and temporary.	Slight adverse (not significant)
ShottsB-3	46m from XX Proposed 33kV UG Cable 1.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
TB-4	5m from XR Proposed LV UG Cable 2.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SCW-5	49.5m from XR Proposed 11kV UG Cable 3.	Medium	Negligible adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Auchter Water	Crossed by XR Proposed 11kV UG Cable 2.	High	Minor adverse. Impacts direct, short-term, certain and temporary.	Moderate adverse (significant)

Hydromorphology

- 9.15.11 The method of damming/isolation and over-pumping (flow bypass) to expose and dry the channel for the laying of cables beneath watercourses would inevitably cause short-term, temporary disruption to channel morphology, riparian habitats, and local hydrological and sediment regimes during construction. With mitigation measures in place—such as reinstating channels to their original condition and the proposed embedded and standard mitigation measures—these potential impacts to channel morphology from crossings are expected to be temporary, direct, certain, short-term minor adverse and would be highly localised. For most of the watercourses considered and so generate a **slight adverse (not significant) effect**. However, for the high importance Auchter Water, this method would result in a **moderate adverse (significant) effect**.

9.15.12 Table 9-33 lists the impacts and effects on hydromorphology for each of the relevant receptors.

9.15.13

Table 9-33 Impacts and Effects on Hydromorphology during construction of the Distribution Line Diversion

Water Feature	Proximity to the works	Importance	Magnitude of Impact	Significance of Effect
BW-9	Crossed by WB Proposed 11kV UG Cable 8.	Medium	Minor adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
BW-27	Crossed by WB Proposed 33kV UG Cable 9.	Medium	Minor adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
LW-4	Crossed by WB Proposed 11kV UG Cable 6.	Medium	Minor adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
SB-12	Crossed by XX Proposed LV UG Cable 1.	Medium	Minor adverse. Impacts direct, short-term, uncertain and temporary.	Slight adverse (not significant)
Auchter Water	Crossed by XR Proposed 11kV UG Cable 2.	High	Minor adverse. Impacts direct, short-term, uncertain and temporary.	Moderate adverse (significant)

Summary of Significant Effects

9.15.14 There are no anticipated significant effects as a result of the construction of the Distribution Live Diversion and associated works on groundwater receptors.

Reinstatement of Watercourses following open cut cable installation

9.15.15 Where damming/isolation and over-pumping (flow bypass) techniques are used, watercourses would be reinstated as found. A Pre-works Hydromorphological and Riparian Survey would be undertaken to provide the baseline against which reinstatement would be provided. Bank and bed sediments must be stored separately and in distinct layers as excavated on geotextile layers so they can be reinstated as found following completion of the works. The banks and the bed would need to be appropriately reprofiled with the inclusion of suitable geomorphic features with the aim to provide betterment on the original channel. Once the watercourses are reinstated, silt fences, geotextile matting or straw bales would be used initially to capture mobilised sediment until the watercourse has returned to a settled state. Regular observations of the watercourses would be undertaken post-works during vegetation re-establishment of the banks, to ensure that no adverse impacts have occurred.

HDD

- 9.15.16 The undergrounding of XR Proposed 11kV UG Cable 2 beneath Auchter Water at NS 84504 55819 will likely result in a minor adverse (significant) effect due to the high importance of this watercourse. To mitigate this, HDD is proposed as a means of underlying the cable without the need for damming and over-pumping the water flow and so minimising disturbance to the surface water quality and hydromorphological features of the channel. Doing so would result in a **slight adverse (not significant) effect**, as shown in Table 9-34 below.

Monitoring

Water Quality Monitoring Plan

- 9.15.17 During pre-construction and construction phases it is proposed to undertake water quality monitoring to ensure that mitigation measures are operating as planned and managing the risk of pollution of water features during works effectively and appropriate action is taken in line with the Emergency Response Plan. Monitoring will help to ensure that should pollution occur it is identified as quickly as possible and appropriate action is taken. A Water Quality Monitoring Plan and subsequent delivery of that monitoring, developed in consultation with SEPA and other relevant stakeholders, is proposed for any receptors considered at risk. Forth and Clyde Canal, RC2-7, BW-9, BW-14, BW-27, LW-4, SB-12 and Auchter Water should be considered to be incorporated into the monitoring plan. As most of these receptors have been deemed to be at negligible impact and not significant risk, daily visual observations upstream and downstream of active works close to or discharging into these watercourses (increasing in frequency during storms) would likely be sufficient, if any monitoring is deemed necessary at all. Receptors deemed to be at significant risk may require daily visual and olfactory observations or after heavy or prolonged rainfall, in situ monitoring using a calibrated hand-held probe, and potentially grab samples on a regular or ad hoc basis for analysis at an accredited laboratory.

Residual Effects

- 9.15.18 Table 9-34 presents a summary of the effects during construction and operation of the Distribution Line Diversion Substation work on the water quality of surface water features and the quality and quantity of groundwater bodies.

Table 9-34 Summary of Effects: Construction

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
Clackmannan Aquifer Group	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	None required	Neutral	Not significant
	Groundwater Quality – HDD works	Slight adverse (not significant)	None required	Neutral	Not significant

Scottish Coal Measures Aquifer Group	Groundwater Flows and Levels – Dewatering, Excavations and HDD	Neutral (not significant)	None required	Neutral	Not significant
	Groundwater Flows and Levels – HDD works	Slight adverse (not significant)	None required	Neutral	Not significant
	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	None required	Neutral	Not significant
	Groundwater Quality – HDD works	Slight adverse (not significant)	None required	Neutral	Not significant
	Groundwater Flows and Levels – Dewatering, Excavations and HDD	Neutral (not significant)	None required	Neutral	Not significant
Superficial Aquifer	Groundwater Flows and Levels – HDD works	Slight adverse (not significant)	None required	Neutral	Not significant
	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk	Slight adverse (not significant)	None required	Neutral	Not significant
	Groundwater Quality – HDD works	Slight adverse (not significant)	None required	Neutral	Not significant
	Groundwater Flows and Levels – Dewatering, Excavations and HDD	Slight adverse (not significant)	None required	Neutral	Not significant
	Groundwater Flows and Levels – HDD works	Slight adverse (not significant)	None required	Neutral	Not significant

Bonny Water	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
Forth and Clyde Canal	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
RC2-4	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
RC2-7	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
BW-6	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
BW-9	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
	Hydromorphology impacts	Slight adverse	None Required	Slight	Not Significant
BW-12	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
BW-14	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
BW-15	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
BW-24	Accidental spillages	Slight adverse	None Required	Slight	Not Significant

	and sediment-laden runoff				
BW-26	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
BW-27	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
	Hydromorphology impacts	Slight adverse	None Required	Slight	Not Significant
LW-4	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
	Hydromorphology impacts	Slight adverse	None Required	Slight	Not Significant
LW-15	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
Catchment 19-1	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
Catchment 19-2	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
Catchment 19-3	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
SB-3	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant

SB-10	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
SB-12	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
	Hydromorphology impacts	Slight adverse	None Required	Slight	Not Significant
ShottsB-3	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
TB-4	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
SCW-5	Accidental spillages and sediment-laden runoff	Slight adverse	None Required	Slight	Not Significant
Auchter Water	Accidental spillages and sediment-laden runoff	Minor adverse	HDD	Slight	Not significant
	Hydromorphology impacts	Minor adverse	HDD	Slight	Not significant

9.16 Project-wide Effects

Introduction

- 9.16.1 This chapter of the EIA Report presents details of the ‘project-wide’ effects of the project for Water Environment. Project-wide (combined) effects are defined here as those effects that are considered separately in relation to various elements of Project which are reported in previous separate sections of this EIA Report chapter, but which have the potential to be of greater significance when considered in combination.

Identification of Shared Receptors

Assessment of Potential Project-wide Effects

Groundwater Receptors

- 9.16.3 The Scottish Coal Measures, Clackmannan Aquifer Group, and Superficial Aquifers occur across several components of the Project.
- 9.16.4 All proposed works would involve some degree of dewatering, which may temporarily influence groundwater levels and flow. However, these effects are expected to be highly localised and short-term, confined to individual steel tower, underground cable and substation locations respectively during construction. Once operational, the steel towers would not present a significant barrier to groundwater movement, as they occupy only a very small footprint within the extensive aquifer systems of the Scottish Coal Measures and Clackmannan Aquifer Group. Consequently, the overall project-wide impact on groundwater is predicted to be negligible.
- 9.16.5 Although the extensive works across all project components increase the potential for contaminant pathways, the implementation of standard mitigation measures outlined in Section 0 would effectively manage these risks. As a result, the overall project-wide impacts are predicted as negligible, temporary, direct, certain and short-term, resulting in **slight adverse (not significant) effect** for the medium to high receptors.

Surface Water Receptors

- 9.16.6 There is greater opportunity for construction contaminants to enter surface watercourses with work being undertaken concurrently across components. The greatest risks include sediment-laden runoff from excavation and temporary trackway works, which could increase turbidity and smother aquatic habitats. Another risk is chemical contamination from accidental spills of fuels, oils, cementitious materials, or concrete washout entering watercourses.
- 9.16.7 However, the implementation of standard mitigation measures outlined in Section 0, would effectively manage these risks. As a result, the overall project-wide impacts are predicted as temporary, direct, uncertain, short-term and negligible, resulting in a **slight adverse (not significant) effect** for the low to medium receptors.

Hydromorphology

- 9.16.8 There are project wide impacts to BW-1, BW-3, BW-6, BW10, BW-11 and BW-13 associated with the New-build Overhead Line; Upgraded Overhead Line, Proposed Partial AA Route Undergrounding and CB Route Removal (and Bonnybridge Substation Extension for BW-3). The specific components are detailed in Volume 3, Appendix 9.1.
- 9.16.9 The potential effects primarily relate to hydromorphology during construction. Risks include physical alterations at watercourse crossings and breaches of riparian buffer zones, particularly at BW-3, where a new outfall is proposed.
- 9.16.10 However, these water features are generally low to medium importance, often comprising modified or artificial drainage channels. With embedded design measures and standard mitigation and additional mitigation such as reinstatement of channels the predicted impacts are temporary, direct, uncertain and short-term negligible to minor adverse, resulting in **slight adverse or neutral (not significant) effect**. No long-term impacts are anticipated.

Flood Risk

- 9.16.11 Flood risk has been assessed for the Denny North Substation Works, Bonnybridge Substation Extension and the Wishaw Substation Extension. Following the conclusions of these assessments, and considering the geographical distances between these substations, there are no project-wide effects predicted for flood risk.

Summary of Potential Project-wide Effects

- 9.16.12 Table 9-36 summarises the potential project-wide effects for Water Environment.

Table 9-36 Summary of Potential Project-wide effects for Water Environment

Water Feature	Summary of Potential Project-wide Effects of the Project for Water Environment
Scottish Coal Measures Aquifer Group	Groundwater Quantity - Negligible (not significant) Groundwater Quality - Negligible (not significant)
Clackmannan Aquifer Group	Groundwater Quantity - Negligible (not significant) Groundwater Quality - Negligible (not significant)
Superficial Aquifers	Groundwater Quantity - Negligible (not significant) Groundwater Quality - Negligible (not significant)
Bonny Water/Red Burn	Surface Water Quality - Negligible (not significant)
BW-1	Surface Water Quality - Negligible (not significant) Hydromorphology - Negligible (not significant)
BW-3	Surface Water Quality - Negligible (not significant) Hydromorphology - Negligible (not significant)
BW-4	Surface Water Quality - Negligible (not significant)
BW-6	Surface Water Quality - Negligible (not significant) Hydromorphology - Negligible (not significant)
BW-10	Surface Water Quality - Negligible (not significant) Hydromorphology - Negligible (not significant)

BW-11	Surface Water Quality - Negligible (not significant) Hydromorphology - Negligible (not significant)
BW-13	Surface Water Quality - Negligible (not significant) Hydromorphology - Negligible (not significant)
BW-16	Surface Water Quality - Negligible (not significant)
Glencryan Burn	Surface Water Quality - Negligible (not significant)
River Carron	Surface Water Quality - Negligible (not significant)
Forth and Clyde Canal	Surface Water Quality - Negligible (not significant) Hydromorphology - Negligible (not significant)
Pow Burn/Tor Burn	Surface Water Quality - Negligible (not significant)
RC1-1	Surface Water Quality - Negligible (not significant)
Catchment 17-2	Surface Water Quality - Negligible (not significant)

9.17 Summary and Conclusions

- 9.17.1 This chapter assessed the potential effects of the Denny to Wishaw Network Upgrade on the water environment. This chapter included the assessment for surface water features (including hydromorphology), groundwater, water resources, flood risk and drainage. It presents the baseline conditions of the water environment and highlights the potential effects and their significance, considering embedded, standard and additional mitigation measures.
- 9.17.2 The baseline was informed from a number of online sources described in 'Baseline Data Collection' under Section 9.3, including a SEPA data request and site walkover carried out in September 2025.
- 9.17.3 Further baseline information and site interpretation is provided in Volume 3 Appendices: Appendix 9.1 Surface Water Feature Register; Appendix 9.2 Watercourse Crossings; Appendix 9.3 Water Framework Directive Groundwater and Surface Water Bodies; Appendix 9.4 Flood Risk Assessments; Appendix 9.5 EASR Authorisations; and Appendix 9.6 Groundwater Dependent Terrestrial Ecosystems Assessment.
- 9.17.4 The importance of each water feature is presented within Table 9-14 and was determined using the criteria presented in Table 9-6. The impact assessment is based on a qualitative source-pathway-receptor approach and magnitude of impact was determined using the criteria in

- 9.17.5 Table 9-7 and overall significance of effect using the matrix presented in Table 9-8. It was found that with the adoption of standard mitigation and good working practices to manage the construction and operation phases, embedded mitigation to avoid adverse impacts, and additional mitigation measures, all potential effects are considered to be not significant.
- 9.17.6 To ensure that these measures are secured through planning, the detail of specific mitigation measures and procedures would be defined in management plans and strategies that can be secured under pre-commencement planning conditions. These include:
- Micro-siting of WB040, WB023 and XX021A;
 - Groundwater level monitoring for ABS-01;
 - HDD to underground cable beneath Auchter Water;
 - Pre-works Hydromorphological and Riparian Survey;
 - Water Quality Monitoring Plan;
 - Construction Environment Management Plan;
 - Groundwater Dewatering Strategy; and
 - WMP (to include a Pollution Response Procedure).