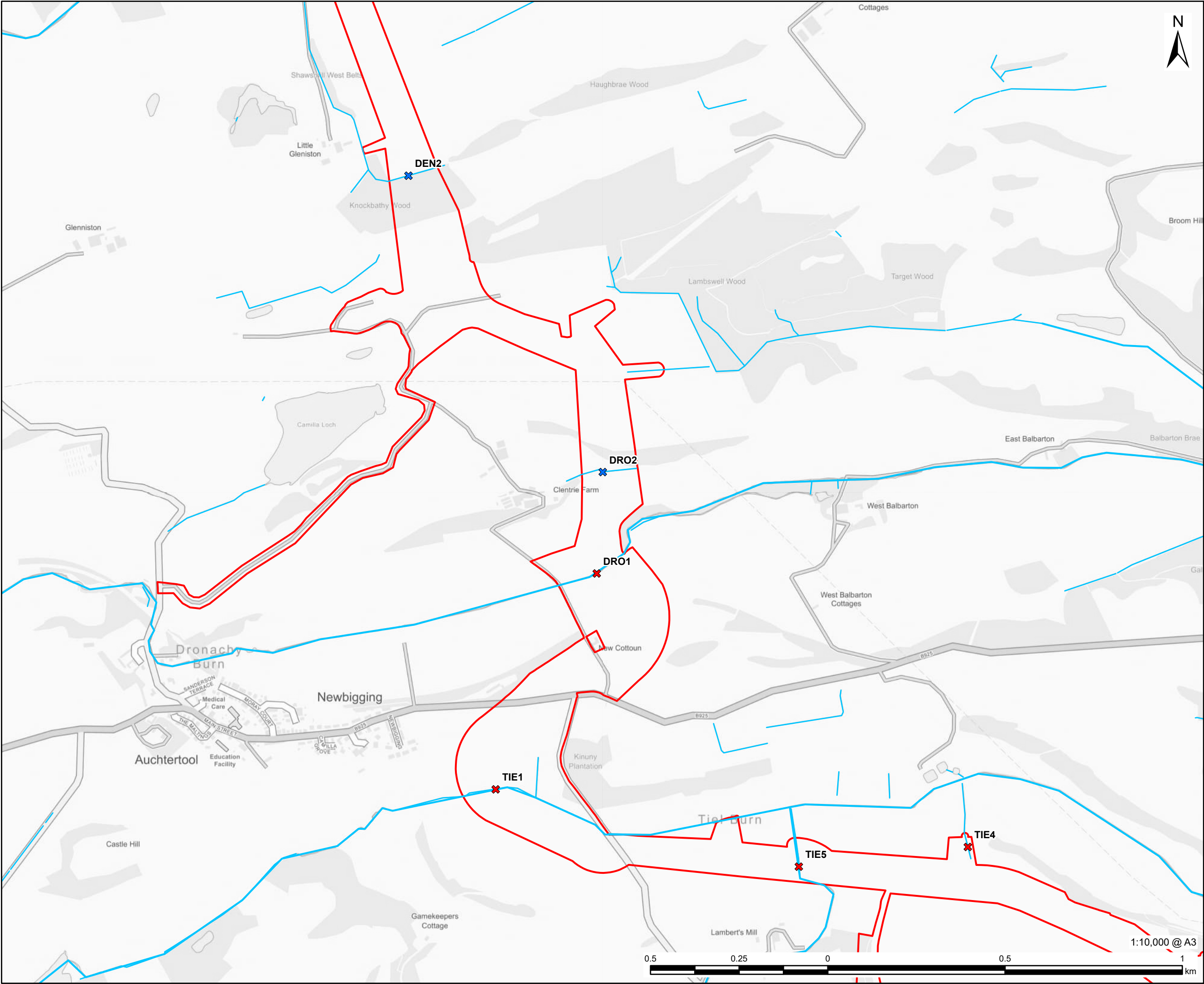




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LEGEND

- Planning Application Boundary
- HDD crossing
- Open cut crossing
- Watercourse

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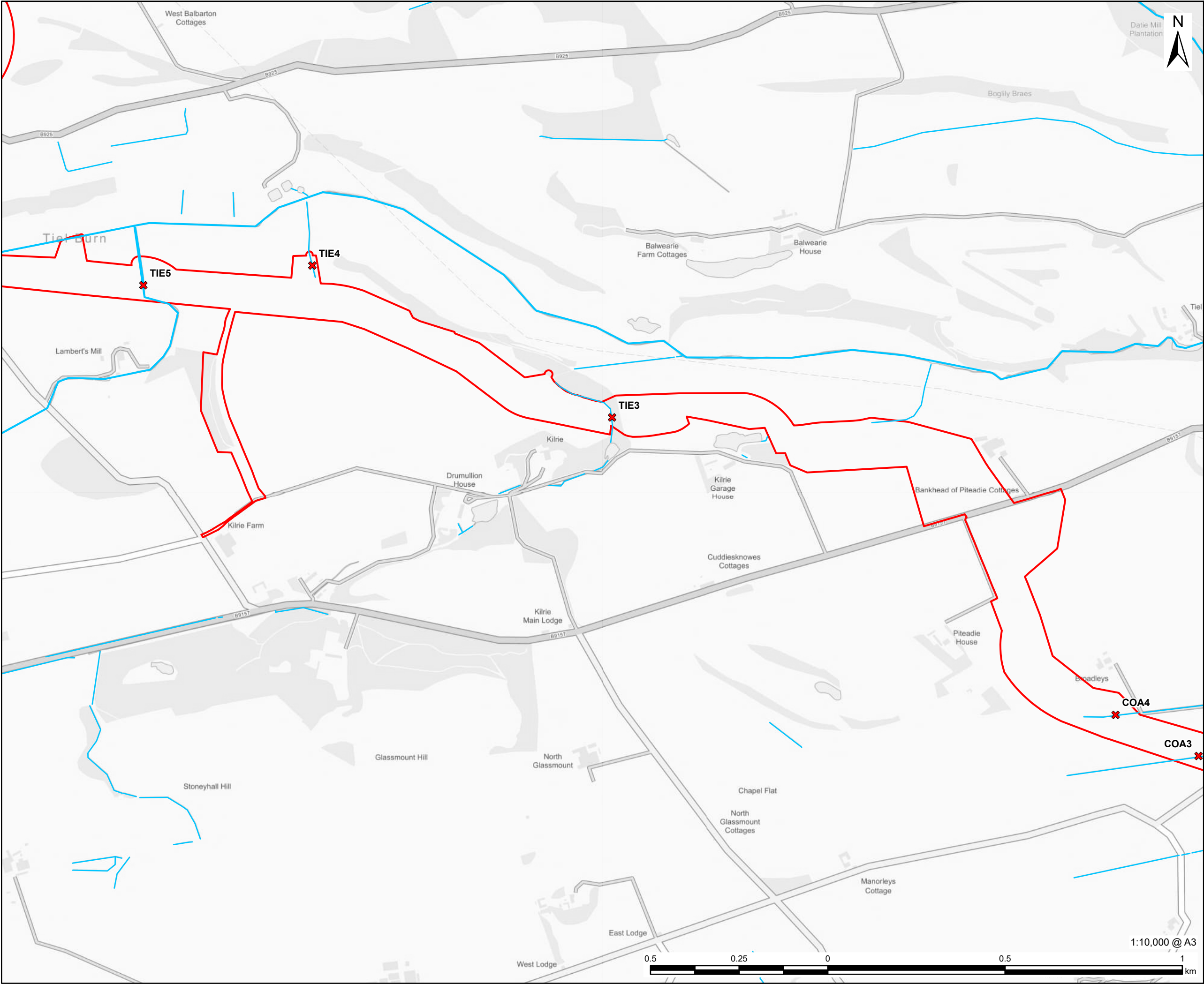
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FIGURE TITLE

Watercourse Crossings

FIGURE NUMBER

Figure 8.5 (Sheet 3 of 5)



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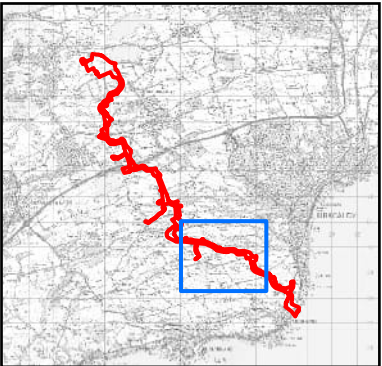
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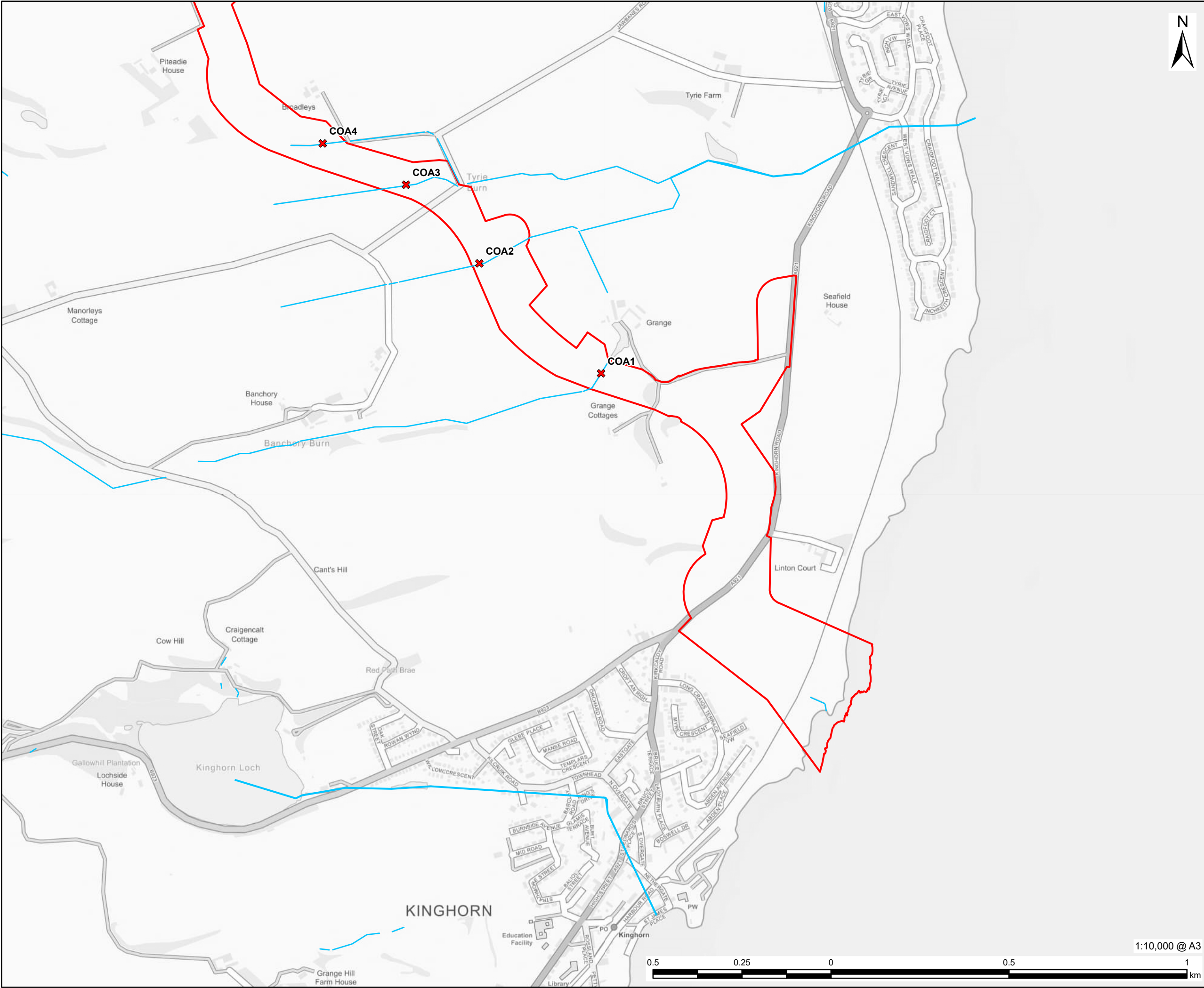
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FIGURE TITLE
Watercourse Crossings

FIGURE NUMBER
Figure 8.5 (Sheet 4 of 5)



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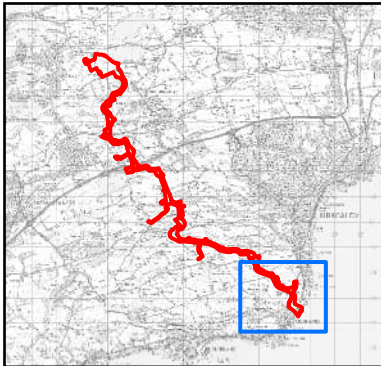
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FIGURE TITLE

Watercourse Crossings

FIGURE NUMBER

Figure 8.5 (Sheet 5 of 5)

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Flood Risk

A full assessment of flood risk from all sources is provided in **Volume 4 Appendices, Appendix 8.3 Flood Risk Assessment**. A summary of flood risk from all sources to the Scottish Onshore Scheme is provided in **Table 8-21 Flood Risk Baseline Summary**. Refer to baseline figures in **Figure 8.3a Present Day Flood Risk** and **Figure 8.3b Future Day Flood Risk** for coastal, fluvial and surface water flooding.

Table 8-21 Flood Risk Baseline Summary

Flood Risk Source	Level of Flood Risk	Comments
Coastal Flooding	Low	The proposed cable route, haul road and Converter Station fall outside of the coastal flood extent in both the present day and future climate change (2080's) scenarios. Therefore, coastal flooding has been scoped out from further assessment.
Fluvial flooding	Low (majority) Medium (associated with watercourses where open trench methods are proposed – see Volume 4 Appendices Appendix 8.4 Watercourse Crossings).	When consulting the SEPA flood maps (Ref 8-43) fluvial flooding is shown to be the primary source of flood risk to the site. Some elements of the Scottish Onshore Scheme are located within areas deemed to have a high likelihood of flooding (each year this area has a 10% chance of flooding), medium likelihood of flooding (each year this area has a 0.5% chance of flooding) and a low likelihood of flooding (each year this area has a 0.1% chance of flooding). A review of the SEPA National Flood Risk Assessment mapping (Ref 8-43) and The Fife Stage 1 SFRA (Ref 8-107) showed there were no historic flood events which have impacted the Converter Station and the cable route. There are two areas where significant high likelihood flood extents are present within the Scottish Onshore Scheme RLB. One area is located to the west of the converter station site where out of bank flooding associated with LOC5 occurs, likely due to a culvert which passes flows underneath the B9097. The second area is located approximately 1 km east of Auchtertool where out of bank flooding associated with TIE1 and TIE5 occurs.
Surface Water Flooding	Low Medium (temporary)	When consulting the SEPA flood mapping (Ref 8-43) the majority of surface water flood risk across the site is located along the underground DC cable route.

Flood Risk Source	Level of Flood Risk	Comments
	attenuation basins)	As defined by SEPA, the definition of high, medium and low likelihood areas reflect that of the fluvial likelihood definitions.
Groundwater Flooding	Medium	<u>Cable Route</u> The SEPA Flood Maps (Ref 8-43) indicate the cable route is not located within areas where groundwater flooding or emergence is likely. Groundwater levels from the ground investigation show a relatively shallow water table which ranges from 0.5 m to 6.31 mbgl. As such below ground elements such as the cable route, HDD entry and exit pits, temporary attenuation basins and jointing bays are likely to interact with groundwater. Based on this information, the risk from groundwater flooding to the site is considered to be Medium. <u>Converter Station</u> Ground investigations undertaken in August 2024 indicated groundwater at 1 m below ground level (bgl) and 4 m bgl. Subsequent groundwater modelling highlighted groundwater levels typically ranged between 2 and 3 m bgl at their shallowest. It is therefore possible that perched groundwater could present itself during and after a rainfall event. It is possible that below ground elements such as the underground AC cable route, swales and attenuation basin associated with the drainage, could interact with groundwater.
Sewer and Water Supply Infrastructure	Low	No sewer or water supply infrastructure has been identified at this time which could pose a risk to the Scottish Onshore Scheme. Given the rural setting it is unlikely most of the route will be within close proximity to any sewer or water supply infrastructure. However, it is likely that surface water and water supply mains could be located along some of the A and B roads crossed along the cable route. The risk of flooding from sewer and water supply flooding is considered Low.

Flood Risk Source	Level of Flood Risk	Comments
Artificial Sources	Low	The SEPA Reservoirs Map shows (Ref 8-43) that the majority of the underground cable route is not located within a reservoir inundation extent. A small part of the underground cable route is located within high risk area of flooding from the Lochore Meadows reservoir where it crosses the River Ore. The Converter Station is located outside of any reservoir inundation extent. All large reservoirs are managed in accordance with the Reservoirs (Scotland) Act 2011 (Ref 8-103) and as such are actively maintained. There are no canals located within the study area. Based on this, it is considered that the flood risk from reservoirs and canals is Low.

Future Baseline

It is likely that through the action of new legislative requirements and ever more stringent planning policy and regulation, that the health of the water environment will continue to improve. The Environment Act 2021 and the Levelling-Up and Regeneration Act 2023 Bill 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.

The current receptor importance criteria presented in **Table 8-21 Flood Risk Baseline Summary** is 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 Scottish Onshore Scheme, 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.

Flood Risk

The impacts of climate change on the future baseline environment must be investigated in order to assess the risk from flooding for the lifetime of the Scottish Onshore Scheme. Under NPF4, developments in Scotland are required to be safe from flood risk for their entire lifetime. It is also a requirement by Fife Council that climate change is considered for any new development. Climate change has been considered for permanent works only given the construction works will only last for a maximum of three years.

A FRA (**Volume 4 Appendices, Appendix 8.3 Flood Risk Assessment**) has been undertaken and has been produced following guidance included in the NPF4 and utilises SEPA's future flood risk mapping. The FRA is also supplemented with a drainage strategy which includes climate change within the design aligning with the local requirements set by Fife Council and the NPF4.

The proposed lifespan of the development is 40 years; however, it is likely the infrastructure will be renewed or replaced as required beyond this period. Impacts of climate change upon flood risk are expected to result in higher peak flows and higher peak rainfall during storm events. The climate change scenarios used within SEPA future flood mapping for coastal, river and surface water flooding are based on high emission scenarios and are therefore considered worst case up to the year 2080.

Importance of Water Features and Flood Risk

The importances of each scoped in surface and groundwater feature and flood risk receptor are assessed based on the above baseline information and presented in **Table 8-22 Importance of Surface and Groundwater Features**. The criteria used to determine this importance is shown in **Table 8-5 Receptor Importance descriptors**.

Table 8-22 Importance of Surface and Groundwater Features

Water Feature	ID	Water Quality Importance	Hydromorphology Importance
Clackmannan Aquifer	N/A	High – Moderately productive aquifer. High classification as supports surface water bodies, GWDTEs and is within a Groundwater Drinking protected Area. Potentially supports PWS01 (depth of borehole unknown, and unknown which aquifer(s) the borehole is sourced).	N/A
Strathclyde Aquifer	N/A	High – Moderately productive aquifer. High classification as supports surface water bodies, GWDTEs potential GWDTEs and is within a Groundwater Drinking Water Protected Area. Potentially supports PWS01 (depth of borehole unknown, and	N/A

Water Feature	ID	Water Quality Importance	Hydromorphology Importance
		unknown which aquifer(s) the borehole is sourced).	
Unnamed Extrusive Rocks (Dinantian) Aquifer	N/A	Medium - Low productivity aquifer which may support rare GWDTE and is within a Groundwater Drinking protected Area. Potentially supports PWS01 (depth of borehole unknown, and unknown which aquifer(s) the borehole is sourced).	N/A
Unnamed Igneous Intrusion (Carboniferous to Permian) Aquifer	N/A	Medium - Low productivity aquifer which may support rare GWDTE and is within a Groundwater Drinking protected Area.	N/A
Superficial Aquifer	N/A	Medium – dispersed aquifer localised to areas of high permeability such as alluvium. It may support GWDTE and PWS02.	N/A
PWS-01 PWS-02	N/A	High – direct human receptor.	N/A
Banchory Burn	COA1	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of Banchory Burn	COA2	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tyrie Burn	COA3	High – whilst no WFD classification and estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s, recent otter (a UK protected species) activity has been recorded on this water feature.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of Tyrie Burn	COA4	Low – no WFD classification; estimated Q95 under 0.001 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tiel Burn (inc. Bottom Burn)	TIE1	High – WFD classification shown in a RBMP but not protected under International or UK legislation; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s. Recent otter (a UK protected species) activity has	Medium – previous alteration and modification but retains some natural features. Some natural fluvial processes may occur, but anthropogenic influences have an obvious impact.

Water Feature	ID	Water Quality Importance	Hydromorphology Importance
		been recorded on this water feature.	
Tributary of Tiel Burn	TIE2	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of Tiel Burn	TIE3	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of Tiel Burn	TIE4	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of Tiel Burn	TIE5	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Dronachy Burn	DRO1	High – WFD classification shown in a RBMP but not protected under International or UK legislation; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s. Recent otter (a UK protected species) activity has been recorded on this water feature.	Medium – previous alteration and modification but retains some natural features. Some natural fluvial processes may occur, but anthropogenic influences have an obvious impact.
Unnamed ditch	DRO2	Low – no WFD classification; estimated Q95 under 0.001 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of Dronachy Burn	DRO5	Low – no WFD classification; estimated Q95 under 0.001 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Den Burn (inc. Gelly Burn)	DEN1	High – WFD classification shown in a RBMP but not protected under International or UK legislation; estimated Q95 between 0.001 m ³ /s and 1.0 m 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.
Tributary of Den Burn	DEN2	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
River Ore	ORE1	High – WFD classification shown in a RBMP but not protected under International or UK legislation; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	High – conforms to natural unaltered state with diverse geomorphic forms and processes. Some modifications.

Water Feature	ID	Water Quality Importance	Hydromorphology Importance
Tributary of River Ore	ORE2	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of ORE2	ORE5	Low – no WFD classification; estimated Q95 under 0.001 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of River Ore	ORE7	Low – no WFD classification; estimated Q95 under 0.001 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of River Ore	ORE11	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of ORE11	ORE12	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of ORE13	ORE14	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of ORE13	ORE16	Low – no WFD classification; estimated Q95 under 0.001 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of ORE17	ORE18	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
ORE20 outflow	ORE19	Low – no WFD classification; estimated Q95 under 0.001 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of LOC2	LOC5	Low – no WFD classification; estimated Q95 under 0.001 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of LOC7	LOC8	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Tributary of LOC7	LOC9	Medium – no WFD classification; estimated Q95 between 0.001 m ³ /s and 1.0 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.
Unnamed ditch	LOC10	Low – no WFD classification; estimated Q95 under 0.001 m ³ /s.	Low – substantially modified, likely artificial cross-section, channelised or realigned.

A baseline review of flood risk receptors (people, property, infrastructure or land) potentially affected by the described all sources of flood risk relative to the study area was undertaken for this assessment. These receptors are identified in **Table 8-23 Flooding Baseline Receptor and Importance**

Table 8-23 Flooding Baseline Receptor and Importance

Flood Source	Approx. NGR	Receptor potentially affected	Receptor importance
Fluvial, surface water	NT 19852 97647	B9097	Medium
Fluvial	NT 22735 91070	Access road to Clentrie Farm	Medium
Fluvial	NT 19528 97195	Access road to The Ha'House	Medium
Fluvial	NT 22002 92874	Access road to Little Gleniston	High
Fluvial	NT 22895 90335	Minor road connecting the B925 and B9157	Medium
Fluvial	NT 26468 88899	Jawbanes Road	Medium
Fluvial	NT 23259 90461	Flood plain	High
Fluvial, surface water, groundwater	Multiple locations	Agricultural land	Medium

8.6 Embedded Mitigation

There are a number of potential water quality, morphological, hydrological and drainage impacts that could occur as a result of the Scottish Onshore Scheme. However, with mitigation, potential impacts can be avoided, minimised and/or reduced, and therefore the magnitude of residual impacts lowered. Mitigation measures that have been designed into the Scottish Onshore Scheme are considered 'embedded mitigation'. As these measures are secured through the actual design they are taken into account in the initial effects prediction, alongside standard mitigation (but not mitigation that is considered to be additional). Embedded mitigation measures relevant to this assessment are described in this section. Details of the Scottish Onshore Scheme can be found within **Chapter 2 Project Description**.

Design Mitigation

Underground Cable Route

The underground cable will reach depths of 1.4 m below the existing ground level (with the exception of HDDs which will be deeper). Groundwater could therefore be encountered. To mitigate this, it is recommended that cables be encapsulated within plastic ducts and as such will be designed to be watertight.

However, under watercourses, railways and roads the depth of the cable will need to be deeper reaching to an estimated maximum depth of 42.49 m BGL on the landfall HDD at the southern end of the Site, although this depends on the trenching method used (discussed further in **Section 8.6 Embedded Mitigation - Control and Management Measures**).

Jointing bays would be constructed at intervals along the cable route to facilitate cable installation into the buried ducts. Following good practice all jointing bays will be protected from water ingress. Any jointing bays will, where possible, be located outside flood zones during the detailed design of the cable route alignment. The jointing bays are underground structures at the depth of the cable trench that are considered to be 50 m² in area and 100% impermeable.

Converter Station - Siting

The Converter Station has been located in an area which is shown to have a very low probability of river and surface water flooding as highlighted on the SEPA flood maps (Ref 8-43). Ancillary works such as drainage will be located in areas with a probability of experiencing some fluvial flooding. However, these works are considered water compatible and designed to convey water.

Converter Station - Foul Waste

During operation, foul waste will be collected and conveyed to a septic tank designed to BS EN 12566 Small Wastewater Treatment Systems for Up To 50 PT - Packaged and / or Site Assembled Domestic Wastewater Treatment Plants (Ref 8-108Ref 8-109Ref 8-56) and with a capacity of 7,500 l (i.e. 7.5 m³) located within the platform area. The foul drainage system will cater for up to 10 people during normal operation. This will need to be registered with SEPA.

The waste collected within the septic tank, which will provide treatment of the foul waste water before discharging to a raised soakaway system located to the north of the platform and designed to BS EN 6297:2007+A1:2008 Code Of Practice For The Design And Installation Of Drainage Fields For Use In Wastewater Treatment (Ref 8-57), will require a CAR licence.

The following additional design standards and specifications are to be used for the design of the new foul water drainage system:

- TS 2.10.09 Site Drainage (NGET, 2017) (Ref 8-109Ref 8-58);
- SEPA's online septic tanks and private sewage treatment systems guidance Ref 8-112);
- SEPA WAT-SG-12 General Binding Rules for Water Run-off and Discharge into Surface Water Drainage Systems (Ref 8-59Ref 8-59);
- British Water Flows and Loads – 4: Sizing Criteria, Treatment Capacity for Sewage Treatment Systems (Ref 8-110Ref 8-60); and
- Building Standards Technical Handbook June 2023: Non-domestic buildings (Ref 8-111Ref 8-61).

Converter Station Operation - Surface Water Runoff

Surface water from the Converter Station, associated platform and access roads in the north of the site will be attenuated and treated using a permanent 8,000m³ attenuation basin located to the north of the site between the converter station and B9097. Any berms / baffles installed during the construction phase, so that the attenuation basin can be used as a settlement basin, will be removed before the attenuation basin is commissioned. The attenuation basin will be designed to be vegetated, which will encourage removal and treatment of fine sediment, dissolved chemical substances and nutrients in runoff, but will require regular maintenance to remove excess growth. It will also be constructed with an impermeable liner to prevent any infiltration of water and thus chemical substances to ground. An inlet forebay will be provided in order to provide enhanced treatment and settlement of fine sediments and associated hydrocarbons, and chemical substances. This may also reduce the need for, and frequency of, silt removal from the main basin area.

Much of the Converter Station to the east of the planned platform will be enclosed within a building housing specialist conversion equipment, and so this will not be exposed to rainwater runoff. However, there will be some sections to the west of the platform that are planned to be outdoors, including the converter transformers and AC switchyard. The risk of hydraulic oils or other chemicals leaking into surface water will be mitigated with any item containing oil to be bunded and have a separate drainage system with oil interceptors before draining out.

Due to the location of the underground cable trenches an outlet pipe from the attenuation basin to the watercourse cannot be routed beneath the trenches, and therefore an open channel will be used over the cable trench and underneath the access road through a designed cattle grate system to allow shallow outfall through the access track before discharging into LOC5 at approximately NGR NT 19619 97616. The open channel will be designed with a depth of 0.5 m and a 1:3 slope. This avoids the need for an engineered outfall to LOC5.

Two permanent swales are also included in the design, one of which will be located on the eastern side of the platform, which will then discharge into the main attenuation basin. The other swale will be located on the southern boundary of the platform and will discharge into LOC5 at approximately NGR NT 19503 97526. Flow rates into the watercourse (LOC5) will be limited to a maximum of 4l/s/ha. Penstock valves will be installed on all drainage networks in order to isolate discharge if needed in the event of a pollution event.

Control and Management Measures

Underground Cable Corridor - Surface Water Runoff

SuDS are required to be used for new developments as per NPF4 (Ref 8-14) and Fife's LDP (Ref 8-23). Although the haul road is unlikely to be heavily trafficked, due to the likely rough surface and use by construction vehicles and plant, there is expected to be a risk from fine sediments and hydrocarbons. To manage this risk two forms of treatment are proposed, with runoff initially captured in roadside swales that will convey the runoff to temporary attenuation basins. These temporary construction SuDS can be further manipulated for enhanced treatment (e.g. inclusion of check dams) whilst chemical spillage risk will require additional procedural mitigation measures discussed under Standard Mitigation.

In total up to 54 temporary attenuation basins are currently proposed across the site (subject to change at the detailed design stage) to temporarily store and help treat surface water runoff. From here, filtered water will drain via gravity pipes or pumped outfalls into nearby watercourses/ditches. Swales will carry runoff to the attenuation basins across the site. The attenuation basins will be designed to be vegetated depressions with 1:3 slopes as to avoid stabilisation issues. To allow for the settlement of sediment they will have an inlet forebay which will subsequently provide treatment for the runoff. A 5 m buffer will be in place around each basin to allow for side slopes and for access and maintenance. Earth berms, fabric silt fences or straw bale walls etc. will be provided to ensure any water contaminated with fine sediment from earthworks associated with the construction of the attenuation basins is prevented from draining to the nearby watercourse. A full list of these attenuation basins and their locations is provided in **Table 8-24 Attenuation basin locations**. Those located within an area of High and/or Medium flood risk are also identified, and this risk is considered in the Assessments of Effects section of this chapter.

Table 8-24 Attenuation basin locations

Attenuation Basin ID	Approx. NGR	Flood Risk	Receiving watercourse
AP TEMP 01 a	NT 27261 87646	Low	N/A
AP TEMP 01 b	NT 27360 87729	Low	N/A
AP TEMP 02	NT 27272 87953	High	N/A
AP TEMP 03	NT 27293 88361	Low	N/A
AP TEMP 04	NT 27444 88520	Low	N/A
AP TEMP 05	NT 26915 88474	Low	COA1
AP TEMP 06	NT 26728 88673	Low	COA2
AP TEMP 07	NT 26692 88817	Low	COA2
AP TEMP 08	NT 26496 88950	Medium	COA3
AP TEMP 09	NT 26462 88987	High and Medium	COA3
AP TEMP 10	NT 26142 89096	Low	COA4
AP TEMP 11	NT 25964 89669	High	N/A
AP TEMP 12	NT 25772 89739	Medium	N/A
AP TEMP 13	NT 25422 89880	High	TIE2
AP TEMP 14 a	NT 24833 89919	Low	N/A
AP TEMP 14 b	NT 24798 89926	Low	TIE3
AP TEMP 15	NT 24509 89992	Low	N/A
AP TEMP 16	NT 23867 90308	High and Medium	TIE4
AP TEMP 17	NT 23444 90316	Medium	TIE5
AP TEMP 18	NT 23193 90349	High	TIE1
AP TEMP 21	NT 22621 90474	Low	TIE1
AP TEMP 22	NT 22646 90508	High and Medium	TIE1
AP TEMP 23	NT 22726 90779	Low	N/A
AP TEMP 24	NT 22896 90881	Low	N/A
AP TEMP 25	NT 22872 91090	Medium	DRO1
AP TEMP 26	NT 22821 91137	Low	DRO1
AP TEMP 27	NT 22985 91675	Low	DRO5
AP TEMP 28	NT 22786 91797	Low	N/A
AP TEMP 29	NT 22485 91932	Low	N/A
AP TEMP 30	NT 22257 92319	High	DEN2
AP TEMP 31	NT 22153 92885	High and Medium	DEN1
AP TEMP 32	NT 22101 92952	Low	DEN1
AP TEMP 33	NT 21956 92942	Low	DEN1
AP TEMP 34	NT 21551 93256	Low	N/A
AP TEMP 35	NT 21242 93224	Low	N/A

Attenuation Basin ID	Approx. NGR	Flood Risk	Receiving watercourse
AP TEMP 36	NT 20964 93203	Low	N/A
AP TEMP 37	NT 20942 93728	Low	ORE5
AP TEMP 38	NT 20888 93943	Low	ORE2
AP TEMP 39	NT 20850 94017	Low	ORE2
AP TEMP 40	NT 20690 94302	Low	N/A
AP TEMP 41	NT 20312 94222	Low	ORE7
AP TEMP 42	NT 19994 94412	Low	N/A
AP TEMP 43	NT 19903 94639	Low	N/A
AP TEMP 45	NT 20059 94632	Low	N/A
AP TEMP 46	NT 20093 94975	High and Medium	ORE1
AP TEMP 47	NT 20042 95346	Medium	ORE12
AP TEMP 48	NT 19802 95561	Low	ORE16
AP TEMP 49	NT 19813 95646	Low	ORE16
AP TEMP 50	NT 20055 95756	Low	ORE16
AP TEMP 51	NT 20186 95917	Low	N/A
AP TEMP 52	NT 20320 96109	Low	ORE19
AP TEMP 53	NT 20409 97000	Low	ORE18
AP TEMP 54	NT 19312 97380	High	LOC8

Where it is not feasible or desirable to discharge to a watercourse, runoff may be released on land at multiple dispersion points to soakaway whilst avoiding concentrating flow and potentially exacerbating downstream flood risk. Pumping may be required if gravity outfalls are not feasible. Outfall arrangements are discussed in more detail in the following section.

Discharge to watercourses may cause pollution to the receptive water feature. To reduce the risk of impact to the watercourses being discharged into, a sampling point will be located downstream of all attenuation basins prior to discharge. At this location water quality will be monitored regularly during the construction phase to ensure water quality is not being impacted from the discharge. Temporary outfalls will have a penstock valve fitted which will close or isolate discharge from the outfall if a pollution incident occurs.

The bases of all proposed attenuation basins for the haul road and cable corridor construction drainage will be designed to be located above groundwater levels. However, groundwater is assumed to be shallow along the cable route and as such attenuation basins may need to be lined and anchored to ensure the hydraulic performance and attenuation capacity of the basin remains as designed. Alternatively, shallower basins with a larger surface area may serve to provide the same level of performance, subject to available space, design and construction costs. Groundwater level delineation should be undertaken prior to construction as part of the Ground Investigation, which should include monitoring during the seasonal maximum (i.e. typically winter/early spring) or otherwise a suitable precautionary estimate as agreed with statutory consultees.

After the construction phase, all temporary attenuation basins will be infilled and the ground reinstated to their original state.

Underground Cable Corridor - Surface Water Outfalls

Infiltration is not considered feasible due to the expected ground conditions at the site. Therefore, water collected within the temporary attenuation basins will be disposed of via discharge to nearby surface waters. Flows from the SuDS will be implemented to control pollution and limit discharge to the following principles:

- The maximum discharge rate will be either 1 in 5-year greenfield runoff rate or 4.0l/s/ha, whichever is lower. For discharge to an existing flood-sensitive watercourse as defined by Fife Council, the lower discharge rate of either a 1 in 2-year greenfield rate or 3.3l/s/ha will be implemented. This will apply only to Tiel Burn within the study area.
- 1 in 10-year attenuation capacity in accordance with CIRIA C649 Control of Water Pollution from Linear Construction Projects Site Guide (Ref 8-83).

Where possible new drainage outfalls will be by a ditch connection to avoid the placement of a permanent engineered structure along the riverbank, as is the case for drainage of surface water runoff from the Converter Station. The design of the ditch will be undertaken post-planning permission and in consultation with SEPA to ensure that the arrangement for how it connects to the receiving watercourse is appropriate (e.g. angled downstream). To avoid water bodies becoming contaminated by suspended sediment, the velocity of flows will be reduced using baffles. It is assumed that outfalls will be plastic pipes, supported by sandbags and fitted with baffles to help dissipate energy and avoid erosion of the bed and bank.

Haul Road Drainage

Excluding locations where HDD will be taking place (such as for the crossing of major watercourses including the River Ore) the haul road will run along the majority of the cable corridor. It will be constructed from granular material which is expected to reduce the permeability of the area the haul road covers due to the compaction of the granular material from tracking. Where necessary geogrid layers may be added to the haul road composition for added stabilisation. It is assumed the unbound road will be up to 7 m wide.

Either side of the haul road is expected to be bunded with soil excavated from the installation of the underground cables. In some locations upstream of the works this has the potential to disrupt natural flow paths. On the upstream side of the works header drains will be located to collect the surface water as a result of the interrupted flow paths and direct it to the nearest watercourse with appropriate filtration of any fine sediment. If this is not possible the runoff will be dispersed to the downstream side of the works or conveyed to watercourses via the proposed temporary attenuation basins.

Runoff from the haul road itself will be intercepted by a channel drain along the edges that will discharge into proposed temporary basins for attenuation and treatment.

Haul Road Watercourse Crossings

Excluding existing culverted crossings, the Scottish Onshore Scheme will require up to 12 temporary culverts and 12 temporary open span bridge crossings. However, at this stage impacts are assessed as assumed culverts, as a worst-case scenario as precise details of where the temporary bridges will be provided are not known. Where the watercourse or ditch will be culverted, the existing connectivity, capacity and freeboard will be maintained. It is expected that the culverts and clear-span bridges required for the temporary haul road will be installed for approximately 2 years, with the potential to change depending on the progression of the construction phase, after which the affected riverbeds and surrounding bank areas will be fully reinstated as found.

The culverting of watercourses is a controlled activity under CAR and requires authorisation from SEPA, as stated in WAT-PS-06-02 (Ref 8-85). Culverting of watercourses will take place in accordance with SEPA WAT-SG-25 River Crossings (Ref 8-63) and WAT-SG-29 Construction Methods (Ref 8-64) guidance.

Where possible, construction of haul road watercourse crossings will be carried out during drier periods of the year, or during a period of dry weather where flows in the watercourse are low. If this is not possible, then the works area will be kept dry by over-pumping the flow to reduce pollution risks.

If required, the natural bed material will be stored during the construction phase and be kept clean. When construction is complete the stored bed material will be used to restore the riverbed. Any affected banks will be restored by re-establishing native riparian vegetation.

In the post-planning phase of the project, the temporary culvert capacity should be established based on the criteria of maintaining the existing watercourse capacity and not increasing flood risk. During this process there will be engagement with landowners and statutory stakeholders (i.e. SEPA and Fife Council) to agree the design and ensure any secondary consents are obtained.

SEPA have prepared guidance on good practice for river crossings (Ref 8-63) which describes the impact on rivers from different types, replicated in **Plate 8.5 River Crossing Types** Extracted from SEPA Document wat-sg-25 **River Crossing Types Extracted from SEPA Document wat-sg-25 (Ref 8-63)**. The plate shows that single span structures which retain the natural channel bed have less impact than closed culverts. Therefore, it is proposed that bottomless culverts or single spanning bridges will be used for new crossings, to minimise the impact of the temporary haul road. The haul road temporary crossings are assumed culverts up to 10 m long at this stage and are assumed to be bottomless, to preserve the natural river bed, or box type with natural substrate within the base of the culvert and will be assessed as a reasonable worst-case scenario.

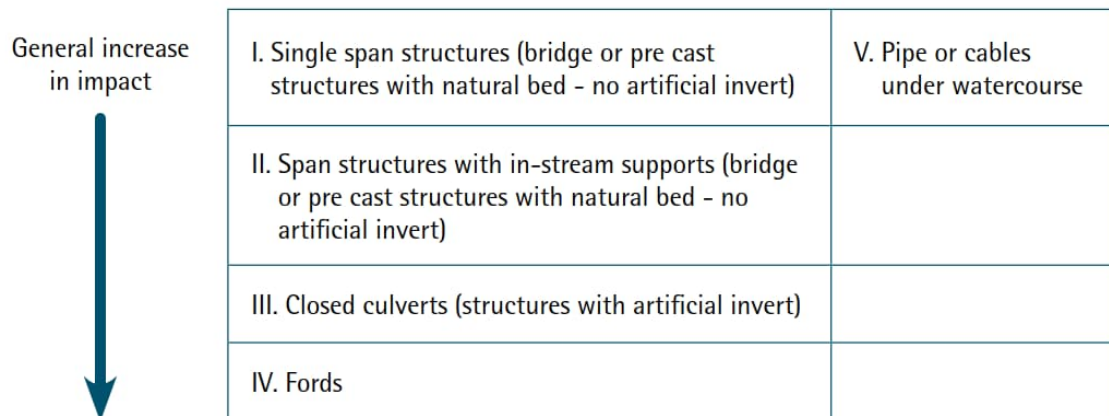


Plate 8.5 River Crossing Types Extracted from SEPA Document wat-sg-25 (Ref 8-63)

All new crossings must be sized appropriately to allow bank and riparian habitat to remain under the temporary crossings to facilitate crossings for mammals. Where this cannot be achieved or may be routinely impassable, a mammal ledge or alternative tunnel near the watercourse crossing should be incorporated into the crossing design.

Watercourse Crossings for Underground Cable Corridor

There are two types of watercourse crossing methodologies proposed: HDD and open cut trenching. The type of methodology to be used has been selected based on the determined importance of the watercourse, ground conditions, environmental constraints and site access and working area availability. For example, minor non-sensitive channels/watercourses are likely to be open cut and assume a bypass flume/temporary dam to enable ducts to be installed between dry bed. Major or sensitive water features will be crossed using the HDD method. **Table 8-25 Locations and types of water crossings** presents each watercourse crossing by the Underground Cable Corridor and the proposed crossing method. Embedded mitigation is outlined below for both methods.

Table 8-25 Locations and types of water crossings

Water feature ID	Water Feature Name	Type of Crossing	Approx. NGR
COA1	Banchory Burn	HDD	NT 25130 88397
COA2	Banchory Burn tributary	Open cut	NT 26037 88605
COA3	Tyrie Burn	Open cut	NT 26015 88893
COA4	Tyrie Burn tributary	Open cut	NT 26062 89061
TIE1	Tiel Burn (inc. Bottom Burn)	Open cut	NT 19710 88943
TIE3	Tiel Burn tributary	HDD	NT 24302 89572
TIE4	Tiel Burn tributary	Open cut	NT 23896 90299
TIE5	Tiel Burn tributary	Open cut	NT 20685 89174
DRO1	Dronachy Burn	Open cut	NT 20003 91223
DRO2	Unnamed Ditch	HDD	NT 22755 91365

Water feature ID	Water Feature Name	Type of Crossing	Approx. NGR
DEN1	Den Burn (inc. Gelly Burn)	Open cut	NT 20745 92525
DEN2	Den Burn tributary	HDD	NT 22410 92253
ORE1	River Ore	HDD	NT 17323 95776
ORE2	River Ore tributary	Open cut	NT 20244 93728
ORE8	River Ore tributary	HDD	NT 19409 94762
ORE11	River Ore tributary	HDD	NT 20252 95415
ORE13	River Ore tributary	Open cut	NT 20197 95682
ORE17	ORE20 (Unnamed Reservoir) outflow	Open cut	NT 19172 96488
LOC4	LOC2 tributary	Open cut	NT 19534 97153
LOC7	LOC4 tributary	Open cut	NT 19095 96751

Runoff from excavations when constructing the HVDC cable development will mobilise sediment and transport it downstream. To reduce the impact of this, excavated areas will be limited to areas where work will currently be taking place to reduce the amount of sediment mobilised at one time.

Open Cut Trenching

The open cut trenching technique will involve excavating a trench up to 1.4 m deep and 1.4 m wide. The underground cables will be laid directly into the trench. The trench will then be backfilled using a combination of locally excavated soils and Cement Bound Sand (CBS) and the land reinstated.

Where possible intrusive watercourse crossings will 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, they may even be dry). However, this cannot be guaranteed and so any water flow within the watercourse will need to be over-pumped/flumed through the works area to maintain a dry trench and to reduce pollution risks.

Horizontal Directional Drilling

HDD is proposed at eleven locations, of which six include watercourse crossings. HDD is a trenchless method of installing underground utilities along a prescribed path, which may encounter watercourses, main roads or landfalls. HDD involves the use of a drill to bore a route below the ground through which ducts will be pulled and cables installed. As the method is trenchless, the requirement for a dry working area is removed, and the associated impacts of over-pumping or channel diversion on water features is removed. The works to be included consist of Site Setup, Pilot Drilling, Reaming, Duct Installation, Marine Support Works (landfall only), Rig Down and Demobilisation and Site Reinstatement.

With the HDD method, there is also a potential risk of accidental surface spillage and subsurface 'frac-out' of drilling fluids, caused by excessive drilling pressures, and contamination of both surface and groundwater bodies. The Construction Environmental

Management Plan (CEMP), detailed in **Section 8.7 Standard Mitigation** below, will include embedded measures to be taken by the Contractor to mitigate these risks.

Excavations relating to HDD at the landfall will range between 1.4 m below existing ground level at TJB to approximately 31 m below the railway line, with a maximum depth of 42.49 m below FGL on the embankment to the east of railway line. Elsewhere the final depth of HDD is to be confirmed post-planning permission and will depend on the underlying ground conditions, the length of the HDD and any clearance requirements. The HDD design and subsequent management and mitigation will be informed by the ground investigation as described within the 'Management of Groundwater Activities' Section.

It is likely that shallow groundwater will be encountered in places within the superficial deposits where the HDD is shallower, and groundwater will be encountered during the deeper excavations, especially where this coincides with the productive Clackmannan and Strathclyde Aquifers. Where below a watercourse, the minimum depth of the HDD below the hard bed will be 1.5 m.

Excavations relating to the open cut trenching are expected to be 1.4 m bgl. It is likely that shallow groundwater will be encountered during these excavations.

Land drainage will be at a depth of 0.9 m bgl. Field drainage affected by the installation of the cable trench will be diverted during construction and will be reinstated with stabilised backfill (such as Cement Bound Sand (CBS)) and locally excavated material above the cables. If private land and agricultural drainage is to be affected, a drainage design produced on an individual field basis may need to be developed after consultation with affected landowners to avoid and minimise risks within the drainage network. It is possible that this will be carried out as part of enabling works to avoid delays or complications with the main construction phase.

Groundwater Dewatering

During HDD activities, there is the potential need for dewatering of groundwater from the send and receive pits associated with the HDD crossings, where groundwater is encountered, and subsequent discharge. Where groundwater is encountered during trenching and excavations, it will be pumped, stored and go through pollution control measures before being discharged into the nearest watercourse at the lower rate of either 4l/s/ha or the greenfield run-off rate. Dewatering activities will be subject to the Controlled Activities Regulations (CAR) (Ref 8-54).

Open Trench Crossings

Open trench watercourse crossings are where a trench is excavated directly through a watercourse and thus if not done carefully pose several environmental risks. These risks vary depending on the site-specific conditions and can lead to an increase in sedimentation, flood risk due to alteration of natural flow paths, and ecological impacts due to changes in flows downstream or from pollution risks. Groundwater levels are also likely to be higher around watercourses and in hydraulic conductivity with the surrounding superficial deposits and watercourse, particularly for larger watercourses such as the River Ore. It is therefore more likely that more significant groundwater abstraction, which requires a CAR authorisation (Ref 8-1) will be required for open trench crossings in these locations.

The CEMP, detailed in **Section 8.7 Standard Mitigation**, will include embedded measures to be taken by the Contractor to mitigate these risks. These measures will include but not limited to:

- Damming and over pumping to create a dry working area and minimise direct water pollution risks. Over-pumping capacity will be determined on a 'case by case' basis by the temporary works designer in consultation with the relevant stakeholder as part of the detailed design ensuring flow rates are sufficient to ensure no upstream hydrological regime changes and using fish friendly pumps as needed. Spare pumps will be maintained on site at all times.
- On-site water management protocols will be incorporated to manage off site flows/runoff from within the working area.
- Discharge of any water in the excavation will be pumped out via methods of which remove sediment before being discharged to local watercourse or allowed to infiltrate to ground at a controlled rate. This ensures discharge is controlled in terms of quality and volume.
- A Groundwater Dewatering Strategy to mitigate the effects of groundwater abstraction will be implemented.

Compound Mitigation

There are six temporary construction compounds proposed along the cable corridor. To minimise the pollution in the construction compounds the following mitigations have been considered:

- The construction compound surfacing will utilise permeable materials where appropriate. Consideration will be given to the prevention of clogging of the permeable pavement by sediments. Permeable paving is particularly effective at removing the main pollutants: suspended solids, hydrocarbons and metals.
- An area for settlement of silts will be included within the attenuation basins as the treatment method for sediment control. All attenuation basins will be provided with oil absorbents to absorb any hydrocarbons accumulated.
- Runoff from adjacent ground will be intercepted and prevented from entering the underground AC and DC cable corridors, as this may create additional polluted runoff.
- Compounds will need to implement water conservation measures which may include:
 - To prevent dust being generated the water within the attenuation basins may be pumped into a bowser and used to dampen the haul roads.
- Vehicle washing should only be used in a bunded area where the runoff can be contained and channelled to a treatment area, such as an attenuation basin, prior to discharge. Runoff from washes and vehicle wash bays must not be allowed to enter surface water or foul water drainage systems without permission.
- Storage areas should sit away from sensitive receptors, at least 10 m from a watercourse or a land drain.

The compounds to the east of the Converter Station will be drained using a combination of internal surface water drainage pipes and swales. Runoff from the compound will be attenuated in the basin to the north of the proposed converter station platform prior to discharge to watercourse LOC5.

Upon completion of the main works, the construction compounds, temporary swales and parking area will be reinstated using stockpiled topsoil. The attenuation basin shall remain in place as it will continue to receive surface water runoff from the permanent access road and converter station platform. However, it will be modified to remove berms which form the settlement basins, making the basin act as one.

Foul Waste

Effluent from the main temporary compound will be collected within a cesspit holding tank with capacity for 450 people which will be removed regularly from the site by a licensed wastewater disposal contractor and then taken to a licensed sewerage treatment works where it can be properly treated in accordance with their regulatory requirements. No discharges of foul wastewater will be discharged to ground or watercourses during construction.

8.7 Standard Mitigation

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 taken into account in the initial determination of effects alongside mitigation embedded in the design. This section is primarily concerned with managing the pollution risks to the water environment during construction works. Although considered standard, these measures will still need to be secured through the adoption of suitable planning conditions.

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 will 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

All works on site are to be undertaken in accordance with a CEMP for the Scottish Onshore Scheme, which shall be developed in the detailed design phase and refined for the consented project in advance of construction, and then as necessary as construction progresses. It is assumed that both the CEMP and Water Management Plan (WMP) will be secured through the application of pre-commencement planning conditions on any successful planning application.

Supporting the CEMP will 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 will be developed post consent and alongside detailed design and when the contractor(s) have been appointed. The WMP will also set out the scope

of proposed water quality, flow and level monitoring of water features and PWS 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 **Section 8.9 Additional Mitigation**.

Mitigation measures will 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.
- Avoid and minimise the risk of damage to physical form and processes of water features.

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

All activities with potential to impact on the water environment may require permission from SEPA under the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (Ref 8-1)² (i.e. referred to henceforth as a CAR licence). 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 will be undertaken post-planning permission to confirm what activities require a CAR licence. There are three levels of CAR 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.
- CAR Registration - allows for small-scale activities that individually pose low environmental risk but, cumulatively, can result in greater environmental risk.
- CAR Licence - allow for site-specific conditions to be set to protect the water environment from activities that pose a higher risk.

The contractor may also be required to obtain a Water Abstraction Licence (Scotland), which is required to abstract water from groundwater bodies in Scotland (Ref 8-65) over 20 m³ per day.

During Pre-construction and Construction phases, the contractor(s) will ensure that all secondary consents are obtained in advance of any relevant works in, over, under or near watercourses, and / or abstractions/discharges (including dewatering), and that the works are carried out in accordance with them.

Good Practice Guidance

The contractor(s) will 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 Practices (Ref 8-66).
- GPP 2: Above ground oil storage (Ref 8-67).
- GPP 3: Use and Design of Oil Separators in Surface Water Drainage Systems (Ref 8-68).
- GPP 5: Works and maintenance in or near water for construction or maintenance works near, in, or over water (Ref 8-69).
- GPP 6: Working at Construction and Demolition Sites (Ref 8-70).
- GPP 8: Safe storage and disposal of used oils (Ref 8-71).
- GPP 13: Vehicle washing and cleaning (Ref 8-72).
- GPP 19: Vehicles: Service and Repair (Ref 8-73).
- GPP 21: Pollution Incident Response Plans (Ref 8-74).
- GPP 22: Dealing with Spills (Ref 8-75); and
- GPP 26: Safe Storage – Drums and Intermediate Bulk Containers (Ref 8-76).

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 guide (Ref 8-77).
- C609 (2004) Sustainable Drainage Systems, hydraulic, structural and water quality advice (Ref 8-78).
- C624 (2004) Development and flood risk – Guidance for the construction industry (Ref 8-79).
- C753 (2015) Publication C753 SuDS Manual (Ref 8-80).
- C523 (2001) Sustainable Urban Drainage Systems – Best practice manual for England, Scotland, Wales and Northern Ireland (Ref 8-81).
- C648 (2006) Control of Water Pollution from Linear Construction (Ref 8-82).
- C649 (2006) Control of Water Pollution from Linear Construction Projects (Ref 8-83)

- C532 (2001) Control of water pollution from construction sites – Guidance for consultants and contractors (Ref 8-84).

SEPA has published the following documents to support the implementation of the Water Environment (Controlled Activities) (Scotland) Regulations 2011:

- WAT-PS-06-02: Culverting of Watercourses (2015) (Ref 8-85).
- WAT-PS-07-03: Engineering in Artificial Inland Surface Waters (Ref 8-86).
- WAT-SG-75: Sector Specific Guidance: Construction Sites (Ref 8-87).
- WAT-SG-78: Sediment Management Authorisation (2012) (Ref 8-88).
- WAT-RM-02: Regulation of Licence-level Engineering Activities (2017) (Ref 8-89).
- WAT-SG-86: Registration Rules for Exposed Sediment Removal (Ref 8-90).
- WAT-SG-93: Guidance for Transport Infrastructure Projects (2016) (Ref 8-91).
- WAT-SG-23 Good Practice Guide – Bank Protection (2008) (Ref 8-92).
- WAT-SG-26: Good Practice Guide - Sediment Management (2010) (Ref 8-93).
- WAT-SG-28: Good Practice Guide - Intakes and Outfalls (2008) (Ref 8-94).
- WAT-SG-29: Good Practice Guide – Temporary Construction Methods (2009) (Ref 8-95).
- WAT-SG-44: Good Practice Guide – Riparian Vegetation Management (2009) (Ref 8-96).

Management of Construction Site Run-Off

Mitigation measures to manage site run-off from construction areas will include:

- Avoidance of wet weather working where practical, especially site clearance, earthworks and works to water features.
- Appropriate separate storage of topsoil/subsoil and materials, and at least 50 m 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 will be carried out and additional measures added if required.
- Any earth bund/ stockpile to be present for longer than two weeks will 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 will 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 basins).

- The control of mud deposits at entry and exit points to the Scottish Onshore Scheme using wheel washing facilities and/ or road sweepers operating during earthworks or other times as considered necessary.
- All plant will 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 will be collected and disposed of at a suitable licenced wastewater facility.

Management of Spillage Risk

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 will be put in place prior to and during construction. Mitigation measures to control of spillages and leaks during construction works will include:

- Storage of fuel and chemicals will be in accordance with GPP 2: Above ground oil storage (Ref 8-67).
- Surface water drains on local roads or within the Scottish Onshore Scheme will be identified by the contractor(s) and where there is a risk that fine particulates or chemical spillages could enter them, they will be protected (e.g. covers or sandbags).
- Any containers/tanks of contaminating substances (e.g. fuel) onsite will 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 will 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) will be similarly protected.
- Any permanent oil storage tanks and temporary storage of 201 litres or more of oil in drums and mobile bowsters, and ancillary pipe work, valve, filters, sight gauges and equipment will have secondary containment (e.g. bunding or drip trays).
- No oil/chemical tanks will be stored within 50 m 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 will be on flat, impermeable hard standing, and with an isolated drainage system.
- Particular care will 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 will not be allowed to flow into any drain or over the edge of a floating barge. The CEMP/ WMP will contain a methodology for dealing with any washing out water, or wheel wash. Wash/ wheel wash water will 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 will 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 will not be undertaken within 50 m 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 50 m. 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 will need to be undertaken by the contractor.
- Biodegradable hydraulic oils will 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 will be available on the site in watertight containers in compounds, areas of works, strategically near water receptors and carried on all mobile plant. They will be regularly checked and topped up, especially after use. Appropriate training will be given to all construction workers in their use and spillage response.
- The CEMP will include an Emergency Response Plan.
- Any plant, machinery or vehicles will 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 on the Scottish Onshore Scheme to 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.
- Construction waste/ debris are to be prevented from entering any surface water drainage or water feature.

Management of Groundwater Activities

To minimise the impact of any groundwater control activities during construction on the water receptors, the contractor will 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 will be informed by the findings from the ground investigation which will provide information of site-specific ground conditions, including groundwater quality and quantity data. In addition, the HDD design will also be informed by the results from the ground investigation. As a minimum the contractor will adhere to the following mitigation measures:

- Groundwater control will 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 will 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 will need to be undertaken with the agreement of the relevant statutory regulator and will need to comply with the pollution prevention requirements set out in the CEMP/WMP.
- 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 flood risk

The management of the risk to any changes in flood risk during temporary works will be managed by applying good practice mitigation measures and construction methods as described below:

- The proposed CEMP will detail measures to prevent an increase in flood risk during the construction works, in addition to the provision of temporary settlement and drainage measures already proposed.
- Construction works undertaken adjacent to, beneath and within watercourses will be undertaken using suitable methods informed by relevant guidance, including SEPA guidance documents.
- The CEMP will incorporate measures aimed at preventing an increase in flood risk during the construction works. Examples of measures that could be implemented include:
 - a. Topsoil and other construction materials will be stored outside of the functional floodplain extent where feasible. If areas located within the functional floodplain are to be utilised for the storage of construction materials, this will be done in accordance with the applicable flood risk activity regulations, if required;
 - b. Connectivity will be maintained between the floodplain and the adjacent watercourses, with no changes in ground levels within the floodplain as far as practicable;
 - c. During the construction phase, the contractor will monitor weather forecasts on a monthly, weekly and daily basis, and plan works accordingly. For example, works in the channel of any watercourse will be avoided or halted were there to be a significant risk of high flows or flooding; and
 - d. The construction laydown area site office and supervisor will be notified of any potential flood occurring by use of the Floodline Warnings Direct or equivalent service.
- The contractor will be required to produce an Emergency Response Plan prior to construction, which will provide details of the response to an impending flood. These actions will be hierarchical meaning that as the risk increases the contractor will implement more stringent protection measures and may include:
 - a. A 24-hour availability and ability to mobilise staff in the event of a flood warning;

- b. The removal of all plant, machinery and material capable of being mobilised in a flood for the duration of any holiday close down period where there is a forecast risk that the site may be flooded;
 - c. Details of the evacuation and site close down procedures; and
 - d. Arrangements for removing any potentially hazardous material and anything capable of becoming entrained in floodwaters, from the temporary works areas.
- If water is encountered during below ground construction, suitable de-watering methods will be used. Any groundwater dewatering required in excess of the exemption thresholds will be undertaken in line with the requirements of a CAR Licence;
- Safe egress and exits are to be maintained at all times when working in excavations. When working in excavations, a banksman is to be present at all times; and
- Prior to any works being undertaken, Scottish Water and other third-party drainage assets will be identified following appropriate desk studies. Suitable construction method statements and mitigation will then be applied to avoid these assets or to undertake the works to minimise any risk to them.

8.8 Assessments of Effects

Construction - Converter Station

Impacts on Groundwater

The construction of the Converter Station 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. 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 of the Scottish Onshore Scheme are assessed to be:

- Groundwater contamination from accidental spills; and
- Deterioration of groundwater quality from uncontrolled construction runoff.

There is the potential that accidental leakages or spills could lead to pollutants leaching into superficial deposits present which may reach the water table and migrate laterally into connected surface water features and GWDTEs. It is also possible that the aforementioned pollutants may leach into the bedrock aquifer where exposed by excavation works and reach the water table, potentially migrating into groundwater abstractions. However, all of these potential risks to groundwater quality will be reduced when implementing measures within the CEMP, standard mitigation and embedded mitigation. Therefore, for all groundwater receptors a certain and direct medium term, temporary negligible adverse impact is expected. Where the Clackmannan Aquifer (High Importance) are located this results in a **slight adverse effect (not significant)** and Superficial Aquifer (Medium Importance) are located this results in a **neutral adverse effect (not significant)**.

Impacts on Surface Water

Table 8-26 Impacts and Effects on Surface Water Quality during Converter Station

Construction lists the magnitude of impact and significance of the effects on each water feature due to the construction of the Converter Station.

Table 8-26 Impacts and Effects on Surface Water Quality during Converter Station Construction

Water Feature	Proximity to the Scottish Onshore Scheme	Importance	Magnitude of Impact	Significance of Effect
ORE18	290 m from Converter Station footprint at closest point.	Medium	Negligible due to distance from Converter Station and associated earthworks with appropriate mitigation measures. The implication of standard and embedded mitigation impacts are likely to be direct, short term, temporary and low adverse.	Neutral adverse (not significant)
LOC5	80 m from Converter Station footprint at closest point.	Low	Converter Station Minor Adverse as this water feature will receive drainage from the attenuation basin and act as a silt trap during construction, resulting in some measurable change in its quality or vulnerability. The implication of standard and embedded mitigation impacts are likely to be direct, short term, temporary and low adverse.	Neutral adverse (not significant)
LOC8	80 m from Converter Station footprint at closest point.	Medium	No change as no clear pathway.	Neutral adverse (not significant)
LOC9	75 m from Converter Station footprint at closest point.	Medium	No change as no clear pathway.	Neutral adverse (not significant)
LOC10	300 m from Converter Station footprint at closest point.	Low	No change as no clear pathway.	Neutral adverse (not significant)

There are only a small number of water features identified within the study area around the Converter Station, and none occur within the perimeter of the Converter Station itself. There is potentially a minor adverse impact on LOC5 as this is designated as a drainage water feature for the attenuation basin. ORE18 is a short distance from the Converter Station and so has some associated risk of surface run-off and pollution from earthworks, building materials and site machinery nearby, but the distance is still deemed sufficient to create only a negligible risk with appropriate mitigation measures, as laid out in **Section 8.7 Standard Mitigation**. Following surveyance of the area, LOC8, LOC9 and LOC10 are not considered to have a clear pathway for run-off or pollution and so **no impact** is expected and therefore there is no effect to report.

Impacts on Flood Risk

The Converter Station construction works primarily take place within areas deemed to have a low likelihood of flooding. The temporary construction compounds to the east of the Converter Station site will be situated on flow path which will have a 1 in 200 year probability of materialising. The compound will likely result in a decrease in permeability which could increase surface water flooding to local agricultural land and the B9097 both of which have a medium importance. Any impacts will be short term, temporary, direct and uncertain. Implementing embedded mitigation such as a suitably designed drainage system and good practice would result in a negligible adverse impact resulting in a **neutral adverse effect (not significant)**.

Construction – Underground Cable

Impacts on Groundwater – Quality

Similar to the Converter Station, the works proposed for the Underground Cable including earthworks, excavations, and watercourse crossings have the potential to expose the aquifer to potential pollutants. This could be from pollutants entering the aquifer from accidental spillages and construction runoff. However, all of these potential risks to groundwater quality will be reduced when implementing measures within the CEMP, standard mitigation and embedded mitigation. Where HDD occurs, there may be more of a potential risk of the accidental surface spillage and subsurface ‘frac-out’ of drilling fluids as a result of excessive drilling pressures.

Therefore, for all groundwater receptors a certain and direct medium term, temporary negligible adverse impact is expected. Where the Clackmannan Aquifer and Strathclyde Aquifer (High Importance) are located this results in a **slight adverse effect (not significant)**. Where the Unnamed Extrusive Rocks (Dinantian) Aquifer, Unnamed Igneous Intrusion (Carboniferous to Permian) Aquifer and Superficial Aquifer (Medium Importance) are located this results in a **neutral adverse effect (not significant)**.

Within the study area five PWS have been identified from a response from Fife Council and from the walkover. A detailed assessment of PWS is shown in **Volume 4 Appendix 8.1 PWS Risk Assessment**.

PWS-01 is situated 160 m away from the Scottish Onshore Scheme where trenching for the underground cables will take place. As a result of the trenching works increased turbidity could occur within the aquifer, and contaminants from accidental spillages and run-off could enter the groundwater. However, as PW-S01 is upslope of the works the likelihood of contaminants reaching the supply is low, and although the depth of the borehole supplying PWS-01 is unknown, it is very likely to be deeper than the trenching works (which are at approximately 1.4 m BGL). Therefore, with the implementation of standard and embedded mitigation the effects of the Scottish Onshore Scheme on the high importance PWS01 are anticipated to be an indirect, uncertain, temporary and short-term negligible impact, which creates a **slight adverse effect (not significant)**.

PWS-02 is located 0 m from the Scottish Onshore Scheme (i.e. cable corridor, although the precise route is within a corridor 40 m wide) and is located where the trenching works are expected to take place. Due to the proximity of PW-S02 to the works, it is very likely that contaminants such as sediment-laden runoff, oils, fuels and other construction chemicals

may enter the water supply, at least temporarily during the works. As a result of this the effect on PW-S02 is expected to be direct, certain, temporary, short term and moderate adverse impact, which results in a **moderate adverse effect (significant)**.

The other PWS in the study area, PWS-03, PWS-04 and PWS-05 are all located over 900 m from the Scottish Onshore Scheme. Therefore, it is expected that there will be **no impact** on water quality to these receptors.

Impacts on Groundwater – Flow and Level Impacts (*Open Cut Trenching*)

Dewatering activities are likely to result in some small changes in groundwater levels and flow directions within the superficial deposits and all four 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, alluvium, peat) and others capable of holding small amounts of potentially perched groundwater (till). 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 Corridor this is expected to be a direct, certain, short term and temporary moderate adverse impact. On the medium importance receptor this results in a **moderate adverse effect (significant)**.

Within the moderately productive Clackmannan and Strathclyde Aquifers groundwater is likely to be encountered both within the superficial deposits such as peat and alluvium and where the bedrock is reached, at which point dewatering activities would take place. Some small changes to groundwater levels and flow directions are likely as a result of dewatering, the effects of which will 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 1.4 m 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 and Strathclyde Aquifers, effects are anticipated to be direct, temporary, medium term and negligible adverse impact which results in a **slight adverse effect (not significant)**.

Within the Unnamed Extrusive Rocks (Dinantian) Aquifer and Unnamed Igneous Intrusion (Carboniferous to Permian) aquifer large amounts of groundwater are not anticipated within the bedrock. However, small amounts of groundwater may be present within weathered zones near the surface. In the case groundwater is encountered within these aquifers and dewatering is required, it is anticipated that impacts to flows and levels would be very small and temporary. The exception to this is where springs are located (although these are also likely to be supported by superficial deposits) and where PWS01 is located (see Section **8.4 Methodology - Private Water Supply Assessment**). Overall, a direct, medium-term, temporary and negligible adverse impact is predicted on the medium importance igneous aquifers, which results in a **neutral adverse effect (not significant)**.

Within the study area five PWS have been identified from a response from Fife Council and from the walkover. A detailed assessment of PWS is shown in **Volume 4 Appendix 8.1 PWS Risk Assessment**.

PWS-01 is situated 160 m away from the Scottish Onshore Scheme where trenching for the DC cables will take place. Where groundwater is encountered dewatering may also be

required, from which groundwater flow may be directed towards the trenching works. However, although the depth of the borehole supplying PWS-01 is unknown, it is very likely to be deeper than the trenching works at approximately 1.4 m BGL and is therefore less likely to be affected by the dewatering of the shallower groundwater. Therefore, with the implementation of standard and embedded mitigation the effects of the Scottish Onshore Scheme on PWS-01 are anticipated to be an indirect, uncertain, temporary and short-term negligible adverse impact, which creates a **slight adverse effect (not significant)**.

PWS-02 is located 0 m from the Scottish Onshore Scheme and is located where the trenching works are expected to take place. However, the cable corridor is 40 m wide and so the trenching can be located as far as practicable from the PWS-02 as possible within the corridor. Where groundwater is encountered during excavations it is likely that dewatering will be required. As a result of this groundwater, including that which may be held within superficial deposits, will be drawn towards the trenching works potentially affecting the PWS-02 supply. Due to the proximity of PWS-02 to the works it is likely there will be a direct, certain, temporary and medium-term moderate impact on the High importance receptor, which results in a **moderate adverse effect (significant)** effect.

The other PWS in the study area, PWS-03, PWS-04 and PWS-05 are all located over 900 m from the Scottish Onshore Scheme. Therefore, it is expected that there will be **no impact** to these receptors.

Impacts on Groundwater – Flow and Level Impacts (HDD)

Throughout the Scottish Onshore Scheme the HDD water crossing method is expected to take place at ten locations across the site. This could potentially temporarily impact the surrounding groundwater flow and levels of the underlying aquifer. **Table 8-27 Number and Location of HDD works** lists the number allocated to each HDD works and its approximate location, and **Table 8-28** predicts the impact on the underlying aquifers, considering the possibility of confined aquifers as well as proximity to other sensitive receptors.

Table 8-27 Number and Location of HDD works

HDD number	Approximate NGR location
1	NT 27326 87848
2	NT 26931 88414
3	NT 25775 89645
4	NT 24728 89913
5	NT 22695 90749
6	NT 22938 91429
7	NT 22200 92323
8	NT 21129 93294
9	NT 20034 94487
10	NT 20034 94914
11	NT 19999 95250

Table 8-28 Assessment of HDD works on Sensitive Receptors

HDD	Aquifer	Potential for Confined aquifer	GWDTE, Springs and PWS within 250m	Impact	Effect
7*, 8, 9, 10, 11	Clackmannan Group (High Importance)	Unlikely, the aquifer is part of the larger Carboniferous-Extensively Mined for Coal aquifer. The removal of coal reduces the impermeable layers which may act as confining layers, and in addition to mine shafts provides flow paths for groundwater.	GWDTE25 GWDTE23 GWDTE22 GWDTE21 GWDTE20 GWDTE17 GWDTE16 GWDTE15 GWDTE14 GWDTE13	There is the potential that groundwater will be encountered either within the bedrock or within the superficial deposits present in which case dewatering would be required. In this case nearby GWDTE may be impacted as a result of reduced flows. However, the identified GWDTEs are situated within Glacial Till deposits. If these ecosystems are groundwater-fed, it is likely via small, dispersed aquifers located in sand and gravel layers interbedded within clay. Given these conditions, it is more likely that these GWDTEs are primarily sustained by direct rainfall. As a result, the risk of significant impact from HDD on these particular GWDTEs is considered minimal. Other GWDTEs located within alluvial deposits lie along the River Ore. In this area, groundwater flow is expected to follow the natural gradient towards the river, flowing eastwards. This is considered a particularly wet environment, further reducing the likelihood that HDD activities would have a significant impact on groundwater flow to these ecosystems. Additionally, with the implementation of standard and embedded mitigation impacts are likely to be direct, short term, temporary and minor adverse.	Slight adverse effect (not significant)
6	Strathclyde Aquifer (High)	Likely, the aquifer is part of the larger Carboniferous – Not Extensively Mined for Coal aquifer. Layers of coal as well as seathearth and mudstones act as confining layers, and so groundwater may be present within sandstones and limestones between the more impermeable beds.	GWDTE28	There is the potential that groundwater will be encountered either within the bedrock or within the superficial deposits present in which case dewatering would be required. In this case nearby GWDTE may be impacted as a result of reduced flows. There is also the potential that confined aquifers would be encountered, within which quality and flow may be impacted as a result of HDD works. However, with the implementation of standard and embedded mitigation impacts are likely to be direct, short term, temporary and minor adverse.	Slight adverse effect (not significant)

HDD	Aquifer	Potential for Confined aquifer	GWDTE, Springs and PWS within 250m	Impact	Effect
5, 4,3, 2, 1	Unnamed Extrusive Rocks – Dinantian (Medium)	Likely- Very limited data is available for this aquifer, however it is almost entirely surrounded by sedimentary aquifers. It is likely that some of the sedimentary beds within the surrounding aquifers may continue between the impermeable beds of the igneous, potentially resulting in partially or entirely confined aquifers.	GWDTE31	There is the potential that groundwater will be encountered either within the bedrock or within the superficial deposits present in which case dewatering would be required. In this case nearby GWDTE31 may be impacted as a result of reduced flows. There is also the potential that confined aquifers would be encountered, within which quality and flow may be impacted as a result of HDD works. However, with the implementation of standard and embedded mitigation impacts are likely to be direct, short term, temporary and minor adverse.	Slight adverse (not significant)
7*	Unnamed Igneous Intrusion Carboniferous to Permian (Medium Importance)	Likely - Very limited data is available for this aquifer, however it is a relatively small aquifer almost entirely surrounded by sedimentary aquifers. It is likely that some of the sedimentary beds within the surrounding aquifers may continue between the impermeable beds of the igneous, potentially resulting in partially or entirely confined aquifers.	GWDTE27, GWDTE26, GWDTE25, GWDTE24	There is the potential that groundwater will be encountered either within the bedrock or within the superficial deposits present in which case dewatering would be required. In this case nearby GWDTE may be impacted as a result of reduced flows. There is also the potential that confined aquifers would be encountered, within which quality and flow may be impacted as a result of HDD works. However, with the implementation of standard and embedded mitigation impacts are likely to be direct, short term, temporary and minor adverse.	Slight adverse (not significant)

*HDD works pass through more than one aquifer

Where HDD works are present there will also be some impact on the Superficial Aquifer as a result of entry/exit pits. Where shallow groundwater is encountered within the Superficial Aquifer dewatering will be required. In this case nearby GWDTE may be impacted as a result of reduced flows. However, the implication of standard and embedded mitigation impacts are likely to be direct, short term, temporary and minor adverse. This results in a **slight adverse effect (not significant)** on the Superficial Aquifer.

Impacts on Surface Water Quality

The potential impacts on surface water quality from the digging and laying of the underground cable include the potential for fine sediment run-off and chemical pollution. This risk applies throughout the cable corridor as it is proposed to drain the working area to local watercourses but has greater significance close to watercourses. **Table 8-29** 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 underground cable.

Table 8-29 Impacts and Effects on Surface Water Quality during Underground Cable Construction

Water Feature	Proximity to the Scottish Onshore Scheme	Importance	Magnitude of Impact	Significance of Effect
COA1 (Banchory Burn)	Crossed by Cable Corridor at NT 26935 88419 using HDD. Receptor for attenuation basin Temp-05.	Medium	Direct, short term and temporary negligible adverse impact. Possible frac-out of fluid into fractures around entry- and exit-points of HDD. However, the risk can be effectively controlled by appropriate methods and mitigation measures (e.g. use of an appropriate drilling fluid mixture and pressure-relieving functions on equipment) and any impact would be temporary and isolated. Runoff from elsewhere will be managed in accordance with a CEMP and will pass through an attenuation basin.	Neutral adverse (not significant)
COA2	Crossed by Cable Corridor and Haul Road at NT 26593 88728 (open cut cable corridor). Receptor for attenuation basins Temp-06 and Temp-07.	Medium	Direct, short term, temporary minor adverse impact due to an open cut cable crossing, temporary works associated with haul road crossing, and two temporary outfalls. This is taking into account the implementation of good practice mitigation measures.	Slight adverse (not significant)

Water Feature	Proximity to the Scottish Onshore Scheme	Importance	Magnitude of Impact	Significance of Effect
COA3 (Tyrie Burn)	Crossed by Cable Corridor and Haul Road at NT 26387 88949 (open cut cable crossing). Receptor for attenuation basins Temp-08 and Temp-09.	High	Direct, short term, temporary minor adverse impact due to an open cut cable crossing, temporary works associated with haul road crossing, and two temporary outfalls. This is taking into account the implementation of good practice mitigation measures.	Slight adverse (not significant)
COA4	Crossed by Cable Corridor and Haul Road at NT 26153 89065 (open cut cable crossing). Receptor for attenuation basin Temp-10.	Low	Direct, short term, temporary minor adverse impact due to an open cut cable crossing, temporary works associated with haul road crossing, and one temporary outfall. This is taking into account the implementation of good practice mitigation measures.	Neutral (not significant)
TIE1 (Tiel Burn)	Crossed by Cable Corridor and Haul Road at NT 22556 90495 (open cut cable crossing). Receptor for attenuation basins Temp-18, Temp-21 and Temp-22.	High	Direct, short term, temporary minor adverse impact due to an open cut cable crossing, temporary works associated with haul road crossing, and three temporary outfalls. This is taking into account the implementation of good practice mitigation measures.	Slight adverse (not significant)
TIE2	Receptor for attenuation basin Temp-13.	Medium	Direct, short term, localised and temporary negligible adverse impact from outfall construction and site runoff, which will be managed in accordance with a CEMP and will pass through an attenuation basin.	Neutral adverse (not significant)
TIE3	Crossed by Cable Corridor and Haul Road at NT 24733 89904 but HDD. Receptor for attenuation basin Temp-14a and 14b.	Medium	Direct, short term and temporary negligible adverse impact. Possible frac-out of fluid into fractures around entry- and exit-points of HDD. However, the risk can be effectively controlled by appropriate methods and mitigation measures (e.g. use of an appropriate drilling fluid mixture and pressure-relieving functions on equipment) and any	Slight adverse (not significant)

Water Feature	Proximity to the Scottish Onshore Scheme	Importance	Magnitude of Impact	Significance of Effect
			impact would be temporary and isolated.	
TIE4	Receptor for attenuation basin Temp-16.	Medium	Direct, short term, localised and temporary negligible adverse impact from outfall construction and site runoff, which will be managed in accordance with a CEMP and will pass through an attenuation basin.	Neutral adverse (not significant)
TIE5	Crossed by Cable Corridor and haul road at NT 23411 90277 (open cut cable crossing). Receptor for attenuation basin Temp-17.	Medium	Direct, short term, temporary minor adverse impact due to an open cut cable crossing, temporary works associated with haul road crossing, and one temporary outfall. This is taking into account the implementation of good practice mitigation measures.	Slight adverse (not significant)
DRO1 (Dronochy Burn)	Crossed by Cable Corridor and Haul Road at NT 22841 91104 (open cut cable crossing). Receptor for attenuation basins Temp-25 and Temp-26.	High	Direct, short term, temporary minor adverse impact due to an open cut cable crossing, temporary works associated with haul road crossing, and two temporary outfalls. This is taking into account the implementation of good practice mitigation measures.	Slight adverse (not significant)
DRO2	Crossed by Cable Corridor at NT 22858 91390 but HDD.	Low	Direct, short term and temporary negligible adverse impact. Possible frac-out of fluid into fractures around entry- and exit-points of HDD. However, the risk can be effectively controlled by appropriate methods and mitigation measures (e.g. use of an appropriate drilling fluid mixture and pressure-relieving functions on equipment) and any impact would be temporary and isolated.	Neutral adverse (not significant)
DRO5	Receptor for attenuation basin Temp-27.	Low	Direct, short term, localised and temporary negligible adverse impact from outfall construction and site runoff, which will be managed in accordance with a CEMP and will pass through an attenuation basin.	Neutral adverse (not significant)

Water Feature	Proximity to the Scottish Onshore Scheme	Importance	Magnitude of Impact	Significance of Effect
DEN1	Crossed by Cable Corridor and Haul Road at NT 22087 92894 (open cut cable crossing). Receptor for attenuation basins Temp-31, Temp-32 and Temp-33.	High	Direct, short term, temporary minor adverse impact due to an open cut cable crossing, temporary works associated with haul road crossing, and three temporary outfalls. This is taking into account the implementation of good practice mitigation measures.	Slight adverse (not significant)
DEN2	Crossed by Cable Corridor at NT 22310 92226 but using HDD. Receptor for attenuation basin Temp-30.	Medium	Direct, short term and temporary negligible adverse impact. Possible frac-out of fluid into fractures around entry- and exit-points of HDD. However, the risk can be effectively controlled by appropriate methods and mitigation measures (e.g. use of an appropriate drilling fluid mixture and pressure-relieving functions on equipment) and any impact would be temporary and isolated. Site runoff, which will be managed in accordance with a CEMP and will pass through an attenuation basin.	Neutral adverse (not significant)
ORE1 (River Ore)	Crossed by Cable Corridor at NT 20063 94884 but using HDD. Receptor for attenuation basin Temp-46.	High	Direct, short term and temporary negligible adverse impact. Possible frac-out of fluid into fractures around entry- and exit-points of HDD. However, the risk can be effectively controlled by appropriate methods and mitigation measures (e.g. use of an appropriate drilling fluid mixture and pressure-relieving functions on equipment) and any impact would be temporary and isolated. Site runoff, which will be managed in accordance with a CEMP and will pass through an attenuation basin.	Slight adverse (not significant)
ORE2	Crossed by Cable Corridor and Haul Road at NT 20778 93956 (open cut cable crossing).	Medium	Direct, short term, temporary minor adverse impact due to an open cut cable crossing, temporary works associated with haul road crossing, and two temporary outfalls. This is taking into account the	Slight adverse (not significant)

Water Feature	Proximity to the Scottish Onshore Scheme	Importance	Magnitude of Impact	Significance of Effect
	Receptor for attenuation basins Temp-38 and Temp-39.		implementation of good practice mitigation measures.	
ORE5	Receptor for attenuation basin Temp-37.	Low	Direct, short term, localised and temporary negligible adverse impact from outfall construction and site runoff, which will be managed in accordance with a CEMP and will pass through an attenuation basin.	Neutral adverse (not significant)
ORE7	Receptor for attenuation basin Temp-41.	Low	Direct, short term, localised and temporary negligible adverse impact from outfall construction and site runoff, which will be managed in accordance with a CEMP and will pass through an attenuation basin.	Neutral adverse (not significant)
ORE11	Crossed by Cable Corridor at NT 19990 95248 but using HDD.	Medium	Direct, short term and temporary negligible adverse impact. Possible frac-out of fluid into fractures around entry- and exit-points of HDD. However, the risk can be effectively controlled by appropriate methods and mitigation measures (e.g. use of an appropriate drilling fluid mixture and pressure-relieving functions on equipment) and any impact would be temporary and isolated.	Neutral adverse (not significant)
ORE12	Receptor for attenuation basin Temp-47.	Medium	Direct, short term, localised and temporary negligible adverse impact from outfall construction and site runoff, which will be managed in accordance with a CEMP and will pass through an attenuation basin.	Neutral adverse (not significant)
ORE14	Crossed by Cable Corridor at NT 19896 95609.	Medium	Direct, short term, temporary minor adverse impact due to an open cut cable crossing and temporary works associated with haul road crossing. This is taking into account the implementation of good practice mitigation measures.	Slight adverse (not significant)
ORE16	Receptor for attenuation basins Temp-48, Temp-49 and Temp-50.	Low	Direct, short term, localised and temporary negligible adverse impact from outfall construction and site runoff, which will be managed in accordance with a CEMP and will pass through an attenuation basin.	Neutral adverse (not significant)

Water Feature	Proximity to the Scottish Onshore Scheme	Importance	Magnitude of Impact	Significance of Effect
ORE18	Crossed by Cable Corridor and Haul Road at NT 20324 97047 (open cut cable crossing). Receptor for attenuation basin Temp-53.	Medium	Direct, short term, temporary minor adverse impact due to an open cut cable crossing, temporary works associated with haul road crossing, and two temporary outfalls. This is taking into account the implementation of good practice mitigation measures.	Slight adverse (not significant)
ORE19	Receptor for attenuation basin Temp-52.	Low	Direct, short term, localised and temporary negligible adverse impact from outfall construction and site runoff, which will be managed in accordance with a CEMP and will pass through an attenuation basin.	Neutral adverse (not significant)
LOC5	Crossed by Cable Corridor and Haul Road at NT 19478 97317 (open cut cable crossing).	Low	Direct, short term, temporary minor adverse impact due to an open cut cable crossing and temporary works associated with haul road crossing. This is taking into account the implementation of good practice mitigation measures.	Neutral adverse (not significant)
LOC8	Crossed by Cable Corridor and Haul Road at NT 19256 97389 (open cut cable crossing). Receptor for attenuation basin Temp-54.	Medium	Direct, short term, temporary minor adverse impact due to an open cut cable crossing, temporary works associated with haul road crossing, and two temporary outfalls. This is taking into account the implementation of good practice mitigation measures.	Slight adverse (not significant)
LOC9	Crossed by Cable Corridor and Haul Road at NT 19169 97483 (open cut cable crossing).	Medium	Direct, short term, temporary minor adverse impact due to an open cut cable crossing and temporary works associated with haul road crossing. This is taking into account the implementation of good practice mitigation measures.	Slight adverse (not significant)
LOC10	Crossed by Cable Corridor and Haul Road at NT 19466 97318 (open cut cable crossing).	Low	Direct, short term, temporary minor adverse impact due to an open cut cable crossing and temporary works associated with haul road crossing. This is taking into account the implementation of good practice mitigation measures.	Neutral adverse (not significant)

Impacts on Hydromorphology

With the proposed mitigation measures, including reinstatement of the channel as found, the potential impacts to channel morphology from culverted access track crossings will result in a likely direct temporary and localised minor adverse impact.

For the intrusive open cut crossings of watercourses for the underground cables there will be unavoidable short term, temporary adverse impacts on the channel morphology, their 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.

Where possible new temporary drainage outfalls will be by a ditch connection to avoid the placement of an engineered structure along the riverbank. With the proposed embedded design measures, including baffles to dissipate flow and sediment input and sandbags to prevent bed and bank erosion, it is likely there will be a temporary and localised minor adverse impact.

Where HDD, or other non-intrusive methods, are used for crossing watercourses, it is considered unlikely that there will be any impact on the hydromorphology of watercourses.

Table 8-30 Table lists the magnitude of impact and significance of the effects on the hydromorphology of each water feature due to the construction of the Underground Cable.

Table 8-30 Impacts and Effects on Hydromorphology during Underground Cable Construction

Water Feature	Proximity to the Scottish Onshore Scheme	Importance	Magnitude of Impact	Significance of Effect
COA1	Crossed by Cable Corridor at NT 26935 88419 using HDD	Low	No change in magnitude of impact on hydromorphology as non-intrusive crossing method is used.	Neutral (not significant)
COA2	Crossed by Cable Corridor and Haul Road at NT 26593 88728	Low	Direct, temporary, short term, minor adverse	Neutral adverse (not significant)
COA3	Crossed by Cable Corridor and Haul Road at NT 26387 88949	Low	Direct, temporary, short term, minor adverse	Neutral adverse (not significant)
COA4	Crossed by Cable Corridor and Haul Road at NT 26153 89065	Low	Direct, temporary, short term, minor adverse	Neutral adverse (not significant)

Water Feature	Proximity to the Scottish Onshore Scheme	Importance	Magnitude of Impact	Significance of Effect
TIE1	Crossed by Cable Corridor and Haul Road at NT 22556 90495	Medium	Direct, temporary, short term, minor adverse	Slight adverse (not significant)
TIE3	Crossed by Cable Corridor and Haul Road at NT 24733 89904 using HDD.	Low	No change in magnitude of impact on hydromorphology as non-intrusive crossing method is used.	Neutral adverse (not significant)
TIE5	Crossed by Cable Corridor and Haul Road at NT 23411 90277	Low	Direct, temporary, short term, minor adverse	Neutral adverse (not significant)
DRO1	Crossed by Cable Corridor and Haul Road at NT 22841 91104	Medium	Direct, temporary, short term, minor adverse	Slight adverse (not significant)
DRO2	Crossed by Cable Corridor and Haul Road at NT 22858 91390	Low	Direct, temporary, short term, minor adverse	Neutral adverse (not significant)
DEN1	Crossed by Cable Corridor and Haul Road at NT 22087 92894	Medium	Direct, temporary, short term, minor adverse	Slight adverse (not significant)
DEN2	Crossed by Cable Corridor at NT 22310 92226 using HDD	Low	No change in magnitude of impact on hydromorphology as non-intrusive crossing method is used.	Neutral (not significant)
ORE1	Crossed by Cable Corridor at NT 20063 94884 but using HDD.	High	No change in magnitude of impact on hydromorphology as non-intrusive crossing method is used.	Neutral (not significant)
ORE2	Crossed by Cable Corridor at NT 20778 93956	Low	Direct, temporary, short term, minor adverse	Neutral adverse (not significant)

Water Feature	Proximity to the Scottish Onshore Scheme	Importance	Magnitude of Impact	Significance of Effect
ORE11	Crossed by Cable Corridor at NT 19990 95248 using HDD	Low	No change in magnitude of impact on hydromorphology as non-intrusive crossing method is used.	Neutral (not significant)
ORE14	Crossed by Cable Corridor at NT 19896 95609	Low	Direct, temporary, short term, minor adverse	Neutral adverse (not significant)
ORE18	Crossed by Cable Corridor at NT 20324 97047	Low	Direct, temporary, short term, minor adverse	Neutral adverse (not significant)
LOC5	Crossed by Cable Corridor at NT 19478 97317	Low	Direct, temporary, short term, minor adverse	Neutral adverse (not significant)
LOC8	Crossed by Cable Corridor at NT 19256 97389	Low	Direct, temporary, short term, minor adverse	Neutral adverse (not significant)
LOC9	Crossed by Cable Corridor at NT 19169 97483	Low	Direct, temporary, short term, minor adverse	Neutral adverse (not significant)
LOC10	Crossed by Cable Corridor at NT 19466 97318	Low	Direct, temporary, short term, minor adverse	Neutral adverse (not significant)

Impacts on Flood Risk – Temporary Culverts/Bridges for Access

Locations for any temporary culvert or single span bridge installations have not yet been confirmed, therefore this assessment has been completed on the assumption that installation of both will be included for watercourse crossings required along the haul road. The installation of temporary culverts and bridges may impact upon the existing flow regime and may cause an increase in flows with risk of flooding to the surrounding land and local roads. Agricultural land and the access roads leading to The Ha'House and Clentrie Farm have a medium importance. The access road to Little Gleniston has a high importance due to it being the only access route into the property. With embedded mitigation, such as using a suitable culvert pipe size and bridge height to ensure no reduction in channel capacity and no interruption of flow regimes, there would be a short term, temporary, indirect, uncertain negligible impact which would result in a **slight adverse effect (not significant)** for the Little Gleniston access road and a **neutral adverse effect (not significant)** for surrounding land and the The Ha'House and Clentrie Farm access roads.

Impacts on Flood Risk – Open Cut Watercourse Crossings

The crossing of watercourses via open cut trenches could cause flow to back up on surrounding watercourses as a result of any temporary damming and over-pumping operation, and in turn increase risk to The Ha'House access road which has a high importance; Little Gleniston access road, Clentrie Farm access road and surrounding land, all of which have a medium importance. With embedded mitigation and good practice there will be no reduction in flows passed forward and no increase in upstream water levels. Overall, there will be a short term, temporary, indirect, uncertain negligible impact which will result in a **slight adverse effect (not significant)** for Little Gleniston access road and a **neutral adverse effect (not significant)** for surrounding land and the The Ha'House and Clentrie Farm access roads.

Impacts on Flood Risk – Underground Agricultural Drainage

The installation of the below ground cable and the haul road has the potential to cause severance, disturbance, or blockage to the underground field drainage infrastructure. It is not currently clear if any water supply infrastructure is present along the route. However, it is likely that sub surface drainage is present within most agricultural land. There is a risk to agricultural land which has a medium importance. Embedded mitigation and good practice such as the proposed Drainage Strategy for the haul road, will capture, treat and discharge surface water appropriately resulting in a short term, temporary, indirect, uncertain negligible adverse impact which will result in a **neutral effect (not significant)**.

Impacts on Flood Risk – Works on the Tiel Burn Flood Plain

Temporary bunding associated with cable excavation works will be located along both sides of the haul road. This will intersect the Tiel Burn flood plain (NT 23259 90461) which could alter flow routes increasing risk to the floodplain itself which is considered to have a high importance and nearby agricultural land and the minor road connecting the B925 and B9157 (NT 22895 90335), both of which have a medium importance. Currently there is no specific design information for the bunding. However, it would only be in situ for a maximum of three years. The topography in this area falls away from the minor road. The temporary bunding will have a short term, temporary, direct, uncertain, **minor adverse magnitude of impact** which will result in a slight **significance of effect (not significant)** on the floodplain and **negligible significance of effect (not significant)** on the agricultural land resulting in a **neutral significance of effect (not significant)** on the B925.

Impacts on Flood Risk – HDD Pits and Jointing Bays

Details of the HDD pits and Jointing Bays (including location and dimensions) are currently unknown and will be finalised at the detailed design stage. However, it has been assumed that they will be located outside of any flood zone. Given groundwater levels along the cable route are considered to be shallow there is likely to be some groundwater interaction which could impact surrounding agricultural land which has a medium importance. When considering the lateral extent of the aquifers underlying the Scottish Onshore Scheme compared to the scale of the HDD pits and Jointing Bays, the embedded mitigation and good practice measures, there will be a short term, permanent, direct and uncertain negligible adverse impact, resulting in a **neutral effect (not significant)**.

Impacts on Flood Risk – Attenuation Basins

A number of temporary attenuation basins (12 no.) are to be located in areas where there is a high likelihood of fluvial or surface water flooding. The basins are therefore likely to be inundated with fluvial and/or overland flows during flood events meaning they will not be able to effectively manage surface water captured within the haul road catchment during this time. This may increase the likelihood of flooding to surrounding agricultural land as the basins will not be able to function as designed restricting their ability to help attenuate surface water runoff from the works. The location and design of the attenuation basins will be finalised at detailed design. The basins are unlikely to cause significant changes to flood behaviour or increase flood risk to adjacent receptors with no long-term residual impacts anticipated following decommissioning and site restoration and as such will have a short term, temporary, direct, certain minor adverse impact when considering embedded mitigation and good practice measures. This will result in a **slight adverse effect (not significant)**.

Impacts on Flood Risk – Construction Compounds

None of the construction compounds along the cable route are located in an area shown to have a likelihood of flooding.

Operation – Converter Station

Impacts on Groundwater

The foul waste is planned to be collected within the septic tank, which will provide treatment of the foul wastewater before discharging to a raised soakaway system located to the north of the converter platform. If circumstances were to arise that the system was overloaded and/or poorly maintained there are potential risks to groundwater including nitrate and phosphate leaching and pathogen migration. Additionally, in areas with clay soils, high rainfall, or poor percolation, the system may not adequately treat or disperse wastewater, leading to surface ponding or percolation of insufficiently treated effluent into groundwater. The Converter Station is underlain by glacial till which can contain clays which may have poor drainage.

A raised soakaway will be used which is more suitable for poorly draining soils. A raised soakaway is built above the existing ground level using a constructed mound of engineered, permeable materials (such as sand and gravel) to allow safe infiltration into the underlying soil. These have a lower risk of groundwater contamination due to the greater vertical separation, compared to a standard soakaway. This also means that only treated water will be discharged. Therefore, with the embedded mitigation and regular maintenance it is determined that an uncertain and direct, long-term, temporary negligible adverse impact is expected. Where the Clackmannan Aquifer (High Importance) is located this results in a **slight adverse effect (not significant)** and for the Superficial Aquifer (Medium Importance), this results in a **neutral adverse effect (not significant)**.

No further impacts are expected to groundwater during the operation of the Converter Station, including to springs or GWDTE.

Impacts on Surface Water Quality – Surface Water Runoff

Once constructed and in operation, the potential for impacts on surface water from the Converter Station are low providing the proposed Drainage Strategy is implemented and drainage assets are maintained in perpetuity for the lifetime of the development. It is

proposed that surface water runoff from the Converter Station will be treated and attenuated by on-site SuDS. Much of the site will be enclosed and roof runoff represents a very low risk to the receiving water environment. However, there will be some sections to the west of the platform that are planned to be outdoors, including the converter transformers and AC switchyard, which will contain oils. The risk of hydraulic oils or other chemicals leaking into surface water runoff will be mitigated with any item containing oil to be bunded and having a separate drainage system with oil interceptors before draining out to the main surface water networks. Surface water drainage from the Converter Station discharges to LOC5 (low importance). Overall, a permanent, long term and direct minor adverse impact is predicted, resulting in a **neutral adverse effect (not significant)**.

Impacts on Surface Water Quality – Foul Drainage

During operation all foul flows are to be collected and conveyed to a septic tank located within the platform area. This is required due to the absence of a suitable public sewer nearby and the fact that it will be impractical to operate a cesspit system due to the requirement for regular emptying.

The ground conditions are not deemed suitable for direct infiltration to ground and so a raised soakaway system will be constructed to allow for discharge of treated effluent to the north of the Converter Station. There will not be a direct discharge to a watercourse. However, LOC5 is relatively close by, and some seepage may find its way to this small watercourse. The septic tank used will be selected to meet the volume requirements of the working capacity of the Converter Station. To ensure mitigation of contamination risk, the treated flows from the septic tank will be designed to BS EN 6297:2007+A1:2008 Code Of Practice For The Design And Installation Of Drainage Fields For Use In Wastewater Treatment (Ref 8-57), and will conform with, and be informed by, a range of good practice guidance listed in **Section 8.6 Embedded Mitigation** including SEPA's online septic tanks and private sewage treatment systems guidance as described in the **EGL4 - SPEN - Drainage Strategy within Volume 4: Appendices, Appendix 8.3: Flood Risk Assessment**.

Applying the precautionary principle, a permanent, long term but indirect minor adverse impact is predicted on LOC5 (low important), which results in a **slight adverse effect (not significant)**.

Impacts on Hydromorphology

The outlet of the surface water drainage system from the Converter Station will discharge into the local watercourse, LOC5, through a cattle grate system that will not require an engineered outfall. Although there might be an increase in fine sediment from surface water runoff, this is likely to be effectively mitigated by swales and the permanent attenuation basin, providing they are well maintained in perpetuity for the life-time of the Scottish Onshore Scheme. Therefore, with mitigation, there is likely to be a permanent and localised negligible adverse impact. On LOC5, a low importance watercourse this would result in a **neutral adverse effect (not significant)**.

Impacts on Flood Risk

The change in hard standing area and ground topography around the proposed Converter Station may affect the existing surface water pathways and areas of pooling, thereby impacting on the existing level of surface water risk to B9097 and surrounding agricultural

land, both of which have a medium importance. When considering embedded mitigation (i.e. Drainage Strategy) there will be a short term, temporary, direct, certain negligible adverse impact resulting in a **neutral adverse effect (not significant)**.

Operation - Underground Cable

Impacts on Groundwater

Potential impacts to groundwater receptors including impacts to levels, flows and quality are considered above within the assessment of the construction of the Underground Cable Corridor (see **Section 8.8 Assessments of Effects - Construction – Underground Cable**). No further impacts are expected to groundwater during the operation phase of the Scottish Onshore Scheme, including to PWS, Springs or GWDTE.

Impacts on Surface Water

Potential impacts on surface water features including the risk of sediment and pollutant run-off are considered above within the assessment of the construction of the Underground Cable Corridor (see **Section 8.8 Assessments of Effects - Construction – Underground Cable - Impacts on Surface Water**). No further impacts are expected to surface water features during the operation phase of the Scottish Onshore Scheme.

Impacts on Flood Risk

Following the installation of the buried cable and removal of the temporary haul road, no impacts on flood risk to any identified receptor is anticipated. See **Volume 4 Appendix 8.4: Flood Risk Assessment** for further information.

Decommissioning

The Scottish Onshore Scheme will not have a fixed operational life. However, it is assumed that it will be operational for 40 years or more, and that with refurbishment and plant replacement, decommissioning is unlikely. Once the design life of the underground cable and/or Converter Station has been reached, a decision will be taken on whether to decommission and remove the infrastructure of the Scottish Onshore Scheme or potentially to replace or upgrade it. The effects associated with the construction phase are considered to be representative of worst-case decommissioning effects, and therefore no separate environmental assessment is necessary for the decommissioning phase. It is likely that should the Scottish Onshore Scheme be decommissioned, then the cables beneath the watercourses will be left in situ during decommissioning.

8.9 Additional Mitigation

Reinstatement of Watercourses following open cut cable installation

Where open cut crossing techniques are used, watercourses will be reinstated as found. A Pre-works Hydromorphological and Riparian Survey will be undertaken to provide the baseline against which reinstatement will 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 will 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 will be used initially to capture mobilised sediment

until the watercourse has returned to a settled state. Regular observations of the watercourses will be undertaken post-works during vegetation re-establishment of the banks, to ensure that no adverse impacts have occurred.

Hydraulic Fracture Risk Assessment

There is a small risk of hydraulic fluid break out from drilling to the watercourse or groundwater aquifer if not appropriately mitigated for site specific conditions. A site-specific Hydraulic Fracture Risk Assessment will be produced prior to commencing works to define the mitigation required based on ground conditions. Water quality monitoring (groundwater and surface water) will also be undertaken prior to, during, and following on from the construction activity to ensure any spillages or other pollution is identified. These mitigation requirements will be outlined in a WMP.

Water Quality Monitoring Plan

Surface Water Quality

During the construction phase 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 temporary works effectively (i.e. during construction phases). Monitoring will help to ensure that should pollution occur it is identified as quickly as possible and appropriate action is taken in line with the Pollution Response Procedure that can be described within the CEMP/ WMP.

The scope of the monitoring during construction and when it is required will be set out in the Water Quality Monitoring Plan, likely pursuant to a pre-commencement planning condition, and in consultation with SEPA and other relevant stakeholders. Water quality monitoring will be required of all potentially affected water features and for this type of development is likely to consist of visual and olfactory observations and in situ monitoring using a calibrated water quality meter, although some grab samples for laboratory analysis may also be undertaken if required. In the absence of any baseline data, the approach will be to monitor the quality of water upstream and downstream of the works to determine any change, and if there is a change, to assess whether pollution is occurring as a consequence of the Scottish Onshore Scheme and to trigger remedial action as set out in the Pollution Response Procedure.

Groundwater Level Monitoring

The current groundwater levels across the Scottish Onshore Scheme area are unknown. To establish baseline conditions, groundwater level monitoring will be required prior to any excavation works. A minimum of 12 months of pre-construction monitoring should be undertaken in advance of excavation activities. Groundwater level monitoring around GWDTEs should be informed by Appendix C of the 'Guidance on Assessing the Impacts of Developments on Groundwater Dependent terrestrial Ecosystems' (Ref 8-106).

During the construction phase, regular groundwater level monitoring should be carried out to assess potential impacts associated with dewatering and related groundworks. A phased monitoring approach may be adopted, aligned with the sequential progression of excavation and construction activities across different areas of the site. The frequency and duration of monitoring should be proportionate to the scale and anticipated duration of dewatering operations within each zone.

Post-construction monitoring is also essential to detect any residual or delayed impacts on groundwater levels, flow regimes, or connected receptors. This includes continued assessment of GWDTEs.

Monitoring data will be critical to inform any required mitigation or adaptive management measures and to ensure long-term protection of the water environment. In particular, winter and early spring monitoring should be undertaken to determine maximum (high) groundwater levels, ensuring that seasonal variations are captured and appropriately considered in the design and mitigation planning. If it is determined that groundwater is shallow, it is likely that attenuation basins and swales will require a lining.

Groundwater Dewatering Strategy

An understanding of groundwater across the site is recommended to be obtained from the ground investigation and monitoring to inform the baseline conditions, particularly where HDD works are expected to take place or foundations constructed for the Converter Station.

A Groundwater Dewatering Strategy will be prepared with the aim to ensure any water entering excavations are appropriately managed and minimising localised draw down and impacts to any nearby receptors. This will be based on a Ground Investigation and will take into account excavation design, permeability, groundwater levels, location of any confined aquifers, and nearby receptors that could be impacted. A suitable method for the management of groundwater entering excavations will be prepared and agreed with SEPA, and any secondary consents obtained. The Groundwater Dewatering Strategy may also be secured through the use of pre-commencement planning condition.

In areas where confined aquifers may be encountered during HDD works, there is a risk of dewatering depleting the confined aquifers. The Groundwater Dewatering Strategy will include measures such as drilling boreholes upstream of the works and confined aquifers to form injection wells. Groundwater from dewatering at the excavations can be collected and pumped into the well by pressure of gravity into the aquifer to help maintain water levels within confined aquifers.

Ground Investigation undertaken should be used to inform where and if confined aquifers are present where HDD is to take place and subsequently where the injection wells should be placed. In the case injection wells are used monitoring of water quality and depth should take place to ensure the groundwater injected is not contaminated, and to prevent excess pressure within the confined aquifer.

Private Water Supplies

PWS-02 Water Supply Investigation

The exact location of PWS-02 was not accessed during the survey due to ongoing activities in the field at that time. It is therefore recommended that a follow-up visit be conducted to confirm the precise location of PWS-02. Following this visit, an assessment should be made to determine whether PWS-02 is genuinely at risk and if the property requires an alternative water supply.

There are two potential options for an alternative water supply following the recommended follow-up visit. The first option is connection to the mains supply, noting that mains infrastructure is present along nearby roads. The second option is the provision of a new PWS

located elsewhere within the user's land ownership. Both options will mitigate any risks to the current PWS users during temporary works. This will be addressed through the PWS Response Plan which will be incorporated into the CEMP. **Volume 4 Appendices, Appendix 8.1 PWS Risk Assessment** outlines a 'Response Plan' summary in the event the quality or quantity of water to a PWS is disrupted. It should be noted here that recent discussions (September 2025) with the property owner with PWS-02 is in the process of connecting to a mains water supply. It is not yet known when this will be completed or if the owner will transition fully to this supply, but if so then this mitigation is unnecessary. Further contact with the owner will therefore be required to determine the supply ahead of works.

Water Quality and Level Monitoring

From the additional follow-up visit, it may be deemed that the PWS source is far enough away from the proposed works to not be significantly impacted and thus no further monitoring will be required. However, if it is still within 250 m of the works it is recommended that PWS-02 is also incorporated into monitoring plans outlined in **Volume 4 Appendices, Appendix 8.1 PWS Risk Assessment** should this still be in use during works.

PWS are an important potable drinking water receptor and wholesome and reliable supplies need to be maintained at all times. Monitoring is proposed of potentially affected PWS to help identify any deterioration that might be a consequence of the construction works so that appropriate action can be taken.

Appendix B of the 'Guidance on Assessing the impacts of development on groundwater abstractions' (Ref 8-30) recommends at least 12 months of monitoring before construction, fortnightly during construction and at least monthly for 12 months post construction. Additional sampling maybe required in the event of an investigation of an incident as described below.

Given the uncertainty inherent in any assessment of potential risk to PWS, and in the absence of any other information it is recommended that PWS01 (and potentially PWS02 as discussed above) is incorporated into all monitoring plans. **Volume 4 Appendices, Appendix 8.1 PWS Risk Assessment** specifies parameters that should be incorporated into the monitoring plan.

Water quality of potentially at risk PWS will be monitored to ensure the water has not been contaminated by the works. Water levels will also be monitored locally and prior to any construction activities to determine the normal response pattern, and then during and post construction to identify any changes to supply. If there is disruption to the supply in terms of quality or quantity the contractor will be required to provide an alternative supply for the duration of the disruption. It is advised that trigger levels for both levels and quality are set after the pre-construction monitoring has been undertaken.

PWS Response Plan

A summary PWS Response Plan is included in **Volume 4 Appendices, Appendix 8.1 PWS Risk Assessment**. It details what should happen in the event of a contamination event at a PWS. A full PWS Response Plan would be prepared post-consent pursuant to a suitably worded pre-commencement planning condition.

Risk from sewer and mains flooding

Prior to any works commencing, a detailed online search of any existing sewers or mains (as well as other utilities) will be undertaken so that appropriate construction methods can be put in place to avoid them or protect them during construction works.

Operation Phase Detailed Drainage Strategy

Prior to any works commencing it is necessary for a Detailed Drainage Strategy to be prepared for the main Converter Station. This will build on the available information prepared at this pre-planning stage and will cover how surface and foul drainage will be managed (in terms of attenuation and treatment to prevent pollution of receiving water features), as well as potable water supply.

In addition, two permanent swales are included in the initial drainage design proposals for the Converter Station. One will be located on the eastern side of the platform and will discharge into the main attenuation basin. The other swale will be located on the southern boundary of the platform and will discharge directly into LOC5 at approximately NGR NT 19503 97526. The main attenuation basin will be lined. During the detailed drainage design the pollution risk to groundwater will be further considered and the need for the two swales to also be lined will be evaluated.

8.10 Residual Effects

Table 8-31 Summary of Effects: Construction and **Table 8-32 Summary of Effects: Operation** present a summary of the residual effects of the construction, operation and decommissioning of the Scottish Onshore Scheme on the water quality and hydromorphology of surface water features and the quality and quantity of groundwater bodies.

Table 8-31 Summary of Effects: Construction

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
Clackmannan Aquifer	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk – Converter Station	Slight adverse (not significant)	WMP and Water Quality Monitoring	Neutral adverse	Not significant
	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/transport for works and HDD ‘frac-out’.	Slight adverse (not significant)	WMP, Water Quality Monitoring and Hydraulic Fracture Risk Assessment	Neutral adverse	Not significant
	Groundwater Flows and Levels – Dewatering and Open Cut Trenches	Slight adverse (not significant)	Groundwater Dewatering Strategy and groundwater	Neutral adverse	Not significant

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
Strathclyde Aquifer			level monitoring		
	Groundwater Flows and Levels – HDD works	Slight adverse (not significant)	Groundwater Dewatering Strategy and groundwater level monitoring	Neutral adverse	Not significant
	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/transport for works and HDD ‘frac-out’.	Slight adverse (not significant)	WMP, Water Quality Monitoring and Hydraulic Fracture Risk Assessment	Neutral adverse	Not significant
	Groundwater Flows and Levels – Dewatering and Open Cut Trenches	Slight adverse (not significant)	Groundwater Dewatering Strategy and groundwater level monitoring	Neutral adverse	Not significant
Unnamed Extrusive Rocks (Dinantian) Aquifer	Groundwater Flows and Levels – HDD works	Slight adverse (not significant)	Groundwater Dewatering Strategy and groundwater level monitoring	Neutral adverse	Not significant
	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/transport for works and HDD ‘frac-out’.	Neutral adverse (not significant)	WMP, Water Quality Monitoring and Hydraulic Fracture Risk Assessment	Neutral adverse	Not significant
	Groundwater Flows and Levels – Dewatering and Open Cut Trenches	Neutral adverse (not significant)	Groundwater Dewatering Strategy and groundwater level monitoring	Neutral adverse	Not significant
	Groundwater Flows and Levels – HDD works	Slight adverse (significant)	Groundwater Dewatering Strategy and groundwater	Neutral adverse	Not significant

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
Unnamed Igneous Intrusion (Carboniferous to Permian) Aquifer			level monitoring		
	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/transport for works and HDD ‘frac-out’.	Neutral adverse (not significant)	WMP, Water Quality Monitoring and Hydraulic Fracture Risk Assessment	Neutral adverse	Not significant
	Groundwater Flows and Levels – Dewatering and Open Cut Trenches	Neutral adverse (not significant)	Groundwater Dewatering Strategy and groundwater level monitoring	Neutral adverse	Not significant
	Groundwater Flows and Levels – HDD works	Slight adverse (significant)	Groundwater Dewatering Strategy and groundwater level monitoring	Neutral adverse	Not significant
Superficial Aquifer	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk – Converter Station	Neutral adverse (not significant)	WMP and Water Quality Monitoring	Neutral adverse	Not significant
	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/transport for works and HDD ‘frac-out’.	Neutral adverse (not significant)	WMP, Water Quality Monitoring and Hydraulic Fracture Risk Assessment	Neutral adverse	Not significant
	Groundwater Flows and Levels – Dewatering and Open Cut Trenches	Moderate adverse (Significant)	Groundwater Dewatering Strategy and groundwater level monitoring	Slight adverse	Not significant
	Groundwater Flows and Levels – HDD works	Slight adverse (significant)	Groundwater Dewatering Strategy and groundwater level monitoring	Neutral adverse	Not significant

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
PWS-01	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/transport for works and HDD ‘frac-out’.	Slight adverse (not significant)	WMP, Water Quality Monitoring, PWS Response Plan and Hydraulic Fracture Risk Assessment	Neutral adverse	Not significant
	Groundwater Flows and Levels – Dewatering and Open Cut Trenches	Slight adverse (not significant)	Groundwater Dewatering Strategy and groundwater level monitoring	Neutral adverse	Not significant
PWS-02	Groundwater Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/transport for works and HDD ‘frac-out’.	Moderate adverse (not significant)	Groundwater Dewatering Strategy, PWS Investigation, PWS Response Plan and groundwater level monitoring	Slight adverse	Not significant
	Groundwater Flows and Levels – Dewatering and Open Cut Trenches	Moderate adverse (not significant)	Groundwater Dewatering Strategy, PWS Investigation, PWS Response Plan and groundwater level monitoring	Slight adverse	Not significant
COA1	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/transport to site.	Neutral adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourse	Neutral adverse	Not significant

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
			s following open cut cable installation		
COA2	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/transport to site.	Slight adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourse s following open cut cable installation	Neutral adverse	Not significant
COA3	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/transport to site.	Slight adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourse s following open cut cable installation	Neutral adverse	Not significant
COA4	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/transport to site.	Neutral adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourse s following open cut cable installation	Neutral adverse	Not significant

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
TIE1	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/transport to site.	Slight adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Slight adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
TIE2	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/transport to site.	Neutral adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
TIE3	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk – earthworks to lay cable; machinery/transport to site.	Slight adverse (Not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
TIE4	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk – earthworks to lay cable; machinery/transport to site.	Neutral adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
TIE5	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –earthworks to lay	Slight adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
	cable; machinery/ transport to site.				
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
DRO1	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –earthworks to lay cable; machinery/ transport to site.	Slight adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Slight adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
DRO2	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/ transport to site.	Neutral adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
DRO5	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/ transport to site.	Neutral adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
DEN1	Surface Water Quality - Excess Fine Sediments and	Slight adverse (not significant)	WMP; Water Quality	Neutral adverse	Not significant

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
	Chemical Spillage Risk –earthworks to lay cable; machinery/ transport to site.		Monitoring Plan.		
	Hydromorphology – underground cable	Slight adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
DEN2	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/ transport to site.	Neutral adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
ORE1	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/ transport to site.	Slight adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Slight adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
ORE2	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –earthworks to lay cable; machinery/ transport to site.	Slight adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
ORE5	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/ transport to site.	Neutral adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
ORE7	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/ transport to site.	Neutral adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
ORE11	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/ transport to site.	Neutral adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
ORE12	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/ transport to site.	Neutral adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
ORE14	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –earthworks to lay cable; machinery/ transport to site.	Slight adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
ORE16	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/ transport to site.	Neutral adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
ORE18	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk – converter station	Neutral Adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –earthworks to lay cable; machinery/ transport to site.	Slight adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
ORE19	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –machinery/ transport to site.	Neutral Adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
LOC5	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk – converter station	Neutral Adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –earthworks to lay cable; machinery/ transport to site.	Neutral Adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
LOC8	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk – converter station	Neutral Adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –earthworks to lay cable; machinery/ transport to site.	Slight adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
LOC9	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk – converter station	Neutral Adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –earthworks to lay cable; machinery/ transport to site.	Slight adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
LOC10	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk – converter station	Neutral Adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Surface Water Quality - Excess Fine Sediments and Chemical Spillage Risk –earthworks to lay cable; machinery/ transport to site.	Neutral Adverse (not significant)	WMP; Water Quality Monitoring Plan.	Neutral adverse	Not significant
	Hydromorphology – underground cable	Neutral adverse (not significant)	Reinstatement of Watercourses following open cut cable installation	Neutral adverse	Not significant
Little Gleniston access road	Flood Risk – culverts and bridges	Slight Adverse (not significant)	None Required	Slight adverse	Not significant
	Flood Risk – Open cut Trenches	Slight Adverse (not significant)	None Required	Slight adverse	Not significant
The Ha'House	Flood Risk – culverts and bridges	Neutral Adverse (not significant)	None Required	Neutral adverse	Not significant
	Flood Risk – Open cut Trenches	Neutral Adverse (not significant)	None Required	Neutral adverse	Not significant
Clentrie Farm (access roads)	Flood Risk – culverts and bridges	Neutral Adverse (not significant)	None Required	Neutral adverse	Not significant
	Flood Risk – Open cut Trenches	Neutral Adverse (not significant)	None Required	Neutral adverse	Not significant

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
Agricultural Land	Flood Risk – below ground cable	Neutral Adverse (not significant)	None Required	Neutral adverse	Not significant
	Flood Risk – temporary haul road	Neutral Adverse (not significant)	None Required	Neutral adverse	Not significant
	Flood Risk – HDD pits and jointing bays	Neutral Adverse (not significant)	None Required	Neutral adverse	Not significant
	Flood Risk – temporary attenuation basins	Neutral Adverse (not significant)	None Required	Neutral adverse	Not significant
	Flood Risk – converter station	Neutral Adverse (not significant)	None Required	Neutral adverse	Not significant
B925	Flood Risk – temporary haul road	Neutral Adverse (not significant)	None Required	Neutral adverse	Not significant
	Flood Risk – converter station	Neutral Adverse (not significant)	None Required	Neutral adverse	Not significant

Table 8-32 Summary of Effects: Operation

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
Clackmannan Aquifer	Groundwater Quality- leaching from foul waste soakaway	Slight adverse (not significant)	None Required	Slight adverse	Not significant
Superficial Aquifer	Groundwater Quality- leaching from foul waste soakaway	Neutral adverse (not significant)	None Required	Neutral adverse	Not significant
LOC5	Surface Water Quality – Surface Water Runoff from Converter Station	Neutral adverse (not significant)	None Required	Neutral adverse	Not significant
	Surface Water Quality – Foul Drainage	Slight adverse (not significant)	None Required	Slight adverse	Not significant

Receptor	Description of Effects	Effects	Additional Mitigation	Residual Effects	Significance
	(converter station)				
	Hydromorphology – drainage outlet	Neutral adverse (not significant)	None Required	Neutral adverse	Not significant
B9097	Flood Risk – Converter Station	Neutral adverse (not significant)	None Required	Neutral adverse	Not significant
Agricultural Land	Flood Risk – Converter Station	Neutral adverse (not significant)	None Required	Neutral adverse	Not significant

8.11 Summary

This chapter assesses the potential effects of the Scottish Onshore Scheme on the water environment. This includes 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, taking into account embedded, standard and additional mitigation measures.

The baseline was informed from a number of online sources described in ‘**Baseline Data Collection**’ under **Section 8.4 Methodology**, including a SEPA data request and site walkover carried out from the 2 to 3 July 2025. Further baseline information and site interpretation is provided in **Volume 4 Appendices, Appendix 8.1 PWS Assessment, Appendix 8.2 WFD Screening and Scoping Assessment** and **Appendix 8.3 Flood Risk Assessment**. The importance of each water feature is presented within Table 8-22 and was determined using the criteria presented in **Table 8-5 Receptor Importance descriptors** Table 8-5. The impact assessment is based on a qualitative source-pathway-receptor approach and magnitude of impact was determined using the criteria in **Table 8-6 Magnitude of Impact** Table 8-6 and overall significance of effect using the matrix presented in **Table 8-7 Matrix for assessment of Significance** Table 8-7.

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**. To ensure that these measures are secured through planning, the detail of specific mitigation measures and procedures will be defined in a number of management plans and strategies, that can be secured under pre-commencement planning conditions. These include:

- Pre-works Hydromorphological and Riparian Survey.
- Hydraulic Fracture Risk Assessment.
- Water Quality Monitoring Plan (surface water quality and groundwater levels).
- Groundwater Dewatering Strategy.
- Water Management Plan (to include a Pollution Response Procedure).

- PWS Response Plan.
- PWS-02 Water Supply Investigation.
- Identification of any existing sewers and mains plus details of methods to avoid and protect them during the works.
- Operation Phase Detailed Drainage Strategy.

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