Glen Earrach AECOM

Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
1	March 2025	Submission	DL	David Lee	Technical Director – Renewable Energy

Table of Contents

Tables

1. Introduction

1.1 The Water Framework Directive (WFD)[1] aims to protect and enhance the quality of the water environment across all European Union (EU) member states. It takes a holistic approach to the sustainable management of water by considering the interactions between surface water (including transitional and coastal waters, rivers, streams and lakes), groundwater and water-dependent ecosystems.

1.2 The WFD is transposed into environmental legislation in Scotland by the Water Environment and Water Services (Scotland) Act 2003 (WEWS Act, SEPA 2003)[2]. Under the WFD, 'waterbodies' are the basic management units, defined as all or part of a river system or aquifer. Waterbodies form part of larger 'river basin districts' (RBD), for which 'River Basin Management Plans' (RBMPs) are used to summarise baseline conditions and set broad improvement objectives.

1.3 In Scotland, the Scottish Environment Protection Agency (SEPA) is the competent authority for implementing the WFD, although many objectives will be delivered in partnership with other relevant public bodies and private organisations (e.g. local planning authorities, water companies, Rivers Trusts, large private landowners and developers). As part of its regulatory role and statutory consultee on planning applications and environmental permitting, The Water Environment (Controlled Activities) (Scotland) Regulations 2011 as amended in 2013[3], and more commonly known as the Controlled Activity Regulations (CAR), apply regulatory controls over activities which may affect Scotland's water environment. SEPA must consider whether proposals for new developments have the potential to:

- Cause a deterioration of a waterbody from its current status or potential; and/or
- Prevent future attainment of good status or potential where not already achieved.

1.4 In determining whether or not a development is compliant or not compliant with the WFD objectives for a waterbody, SEPA must also consider the conservation objectives of any Protected Areas (i.e. Natura 2000 sites or water dependent Sites of Special Scientific Interest) and adjacent WFD waterbodies, where relevant.

[1] Water Framework Directive 2000/60/EC. Available Online: https://www.legislation.gov.uk/eudr/2000/60/contents
[2] Scottish Parliament, 2003. Water Environment Water Services ('the WEWS Act') (Scotland) Act 2003. Available Online: https://www.legislation.gov.uk/asp/2003/3/contents
[3] Scottish Parliament, 2011. The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (CAR) ('the CAR Regulations'). Available online: https://www.legislation.gov.uk/ssi/2011/209/contents/made

2. WFD Water Bodies

2.1 There are six WFD waterbodies identified which interact with the Proposed Development using SEPA's Classification Hub[4]. These comprise:

- Surface Water Bodies:
  - Loch Ness.
  - Allt Saigh;
  - River Enrick;
  - River Coiltie
- Groundwater Bodies:
  - Inverness.
  - Northern Highlands.

2.2 Under WFD, surface waterbody status is classified on the basis of chemical and ecological status or potential. Ecological status is assigned to surface waterbodies that are natural and considered by SEPA not to have been significantly modified for anthropogenic purposes. The overall objective for natural surface waterbodies is to achieve Good Ecological Status and Good Chemical Status. Good Ecological Status represents only a small degree of departure from pristine conditions, which are otherwise known as High Ecological Status.

2.3 Groundwater body status is classified on the basis of quantitative and chemical status. Status is assessed primarily using data collected from SEPA monitoring network; therefore, the scale of assessment means that groundwater status is mainly influenced by larger scale impacts such as significant abstraction or widespread / diffuse pollution.

2.4 The assessment for each of these WFD bodies has been carried out below from

2.5 **Table 2 WFD Loch** Ness to **Table 7 WFD Northern Highland Groundwater Body.**

3. Assessment Criteria

3.1 The assessment considers the likely impact of the Proposed Development on WFD parameters (and whether this could lead to deterioration) and whether or not the Proposed Development may prevent SEPA mitigation measures from being implemented.

3.2 **Table 1 Assessment Matrix** presents the matrix used to assess the impact of the Proposed Development on surface water status or potential classification. It ranges from a major beneficial impact (i.e. a positive change in overall WFD status) through to no impact to deterioration in overall status class. The colour coding used in **Table 1 Assessment Matrix** is applied to the tables in the assessment.

Table 1 Assessment Matrix

Impact	Criteria	Outcome
Major Beneficial	Impacts that taken on their own or in combination with others have the potential to lead to the improvement in the ecological status or potential of a WFD quality element for the entire waterbody.	Increase in status of one or more WFD element giving rise to a predicted rise in status class for that waterbody.
Minor / Localised Beneficial	Impacts when taken on their own or in combination with others have the potential to lead to a minor localised or temporary improvement that does not affect the overall WFD status of the waterbody or any quality elements	Localised improvement, no change in status of WFD element

[4] SEPA [online]. Available: https://www.sepa.org.uk/data-visualisation/water-classification-hub/

Impact	Criteria	Outcome
No Impact	No measurable change to any quality elements.	No Change
Localised temporary adverse impact	Impacts when taken on their own or in combination with others have the potential to lead to a minor localised or temporary deterioration that does not affect the overall WFD status of the waterbody or any quality elements or prevent improvement. Consideration will be given to mitigation measures such as habitat creation or enhancement measures.	Localised deterioration, no change in status of WFD element when balanced against mitigation measures embedded in the scheme.
Adverse Impact on class of WFD element	Impacts when taken on their own or in combination with others have the potential to lead to the deterioration in the WFD status class of one or more biological quality elements, but not in the overall status of the waterbody. Consideration will be given to mitigation measures such as habitat creation or enhancement measures.	Decrease in status of WFD element when balanced against positive measures embedded in the Proposed Development.
Adverse Impact on overall WFD class of waterbody	Impacts when taken on their own or in combination with others have the potential to lead to the deterioration in the ecological status or potential of a WFD quality element, which then lead to a deterioration of status / potential of waterbody.	Decrease in status of overall WFD waterbody status when balanced against positive measures embedded in the scheme.

4. WFD Assessment

4.1 WFD Assessment for Loch Ness

Surface Water Body (name/ID/RBMP):	Loch Ness ID: 100156	Current status or potential:	Good
Water body length:	22.5 km	Target status or potential (2027):	Unknown
Water body area:	55.3 km^2	Protected Areas:	Urquhart Bay Wood SSSI and SAC River Moriston SAC
Heavily modified?	No		
Summary of scheme components:	Key scheme components considered include the risk of pollution during construction and the abstraction and discharge of water to and from Loch Ness during operation. Minor watercourses draining to Loch Ness but not designated under the WFD in their own right are also considered. Principle impacts on them include construction site runoff, runoff from new areas of hardstanding and loss of catchment area during operation.		

Table 2 WFD Loch Ness

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Overall status	Good							
Pre-HMWB status	Good							
Overall ecology	Good							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Physico-Chem	Good		Suspended sediments and chemical spillages from construction site runoff have the potential to affect ecological WFD elements in Loch Ness including those coming from the small watercourses draining to the Loch and during works within the loch itself.	**Loss of habitat** The construction of the Lower Control Works (LCW) structures including concrete apron, rock armour and spillway outfall will result in the permanent loss of littoral habitat. **Risk of concrete residues** When first constructed there may be a concrete residue left on the basin forming the Headpond that could slightly increase the pH of the water initially held in the basin. However, this water would be rapidly diluted and dispersed in Loch Ness. **Variation in water level** Water level will stay within the loch's natural variation. There will be no quality impacts. **Effects on thermal stratification** The operation of the Proposed Development has the potential to locally disrupt the thermal stratification of the loch and monitoring/modelling linked to mitigation including adaptive operation has been proposed. Although a	Implementation of an outline Construction Environmental Management Plan (oCEMP) (**Appendix 3.1 oCEMP**) and the Outline Water Management Plan (oWMP) (**Appendix 10.4 oWMP**). Measures to reduce the risk of chemical spillages such as bunded fuel tanks, spill kits, plant nappies on static plant, and the implementation of an Emergency Response Plan. Temporary and Permanent works affecting watercourses will require a CAR Licence from SEPA. Installation of a temporary cofferdam and with an outer site-specific silt curtain to prevent spillages and runoff from the	Water quality monitoring of the Headpond and Loch Ness is proposed to ensure quality is maintained and to optimise the operation of the Proposed Development to minimise the changes and reduce any increased risk of an algal bloom occurring. The LCW has been designed to control the velocity and therefore energy of the discharge from the Proposed Development and therefore reduce the risk of disrupting thermally stratified layers of water during the summer. A concrete apron will be provided in front of the main outlet to further prevent scour of the bed.	Negligible to minor adverse impacts are predicted only with mitigation. Therefore, the Proposed Development would be compliant with all WFD objectives.	River Ness, Loch Dochfour and River Moriston
Dissolved Oxygen	High							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Total Phosphorus	Good			natural process, from a water quality perspective it may not actually result in any particular deterioration. This is because thermal stratification (and subsequent overturn) tends to be associated with a reduction in water quality. Reduced stratification or maintaining a fully mixed water column reduces the potential for poorer water quality to form in bottom waters, particularly the release of bioavailable nutrients that can lead to algal blooms occurring under certain conditions. Indeed, preventing thermal stratification is one method that can be applied to control algal blooms where internal recycling of nutrients is a	construction works into Loch Ness. Works in Loch Ness should be carried out under the supervision of an Aquatic Ecological Clerk of Works (ECoW). Please refer to **Chapter 10 Water Environment** and **Chapter 9 Aquatic Ecology** of the EIA for further details.	All maintenance operations would be carried out in accordance with the Operators Environmental Management System, which will include measures to avoid spillages of chemical substances.		
Salinity	High							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Acid Neutralising Capacity	High			primary factor[5] by preventing the release of sediment-derived nutrients and increasing the mixing depth of nuisance blue-green algae[6]. However, it remains important that water quality conditions in Loch Ness are investigated before and during the operation of the Proposed Development and any changes in water quality and aquatic ecology are monitored. This data can then be used to optimise operation to minimise any significant adverse				

[5] Toffolon, M., Ragazzi, M., Righetti, M., Teodoru, C.R., Tubino, M., Defrancesco, C. and Pozzi, S., 2013. Effects of artificial hypolimnetic oxygenation in a shallow lake. Part 1: Phenomenological description and management. Journal of environmental management, 114, pp.520-529.
[6] Dodds, W.K., 2002. Freshwater ecology: concepts and environmental applications. Elsevier.

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Total Nitrogen	High			effects. **Increasing the risk of algal blooms** There may be an increased risk that discharges from the Headpond could encourage an algal bloom to occur in Loch Ness if water in the Headpond is not frequently renovated and it becomes nutrient enriched, although the catchment is unlikely to generate significant nutrient inputs due to its relative size and turnover. Stagnation can occur, as well as impacts on the stratification process due to continuous pumping/discharges. However, these are unlikely due to continuous operation of the Headpond and the same reasons mentioned under "Water Stratification". Reduced water quality through algal development could affect other biological elements. As this is not expected to occur as described above, no adverse impacts are predicted. **Spillage risk during operation** During operation there is a low risk that small				

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
				quantities of oil or fuel may be spilt from service vehicles and routine maintenance of fixed plant, especially at the LCW. All maintenance operations would be carried out in accordance with the Operators Environmental Management System, which will include measures to avoid spillages of chemical substances.				
Biological elements	Good							
Invertebrate animals	High		Effects of cofferdam construction on invertebrate species within Loch Ness are deemed negligible. A minor adverse effect is posed by the spread or introduction of INNS.	Effects of water level alterations and the operation of the LCW on invertebrates in Loch Ness are deemed negligible. A minor adverse effect posed by the spread or introduction of INNS through operational activities.	Survey of the extent of the proposed cofferdam and temporary pier works in Loch Ness for the presence of INNS will be required prior to any works and appropriate site-specific remediation measures implemented in agreement with SEPA. Please refer to **Chapter 9 Aquatic Ecology** of the Environmental	The effects of the introduction of INNS on different receptors during operation are consistent with construction effects. Appropriate site-specific remediation measures will be implemented in agreement with SEPA. Please refer to **Chapter 9 Aquatic Ecology** of the	No significant residual adverse impacts are predicted. Therefore, the Proposed Development would be compliant with all WFD objectives.	River Ness, Loch Dochfour and River Moriston
Macroinvertebrates (acid)	High							
Macroinvertebrates (CPET)	High							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
					Impact Assessment (EIA) Report for further details.	EIA Report for further details.		
Alien species	Good		Potential for INNS to be spread through or introduced to the Proposed Development Site during construction - factors such as inter-species competition and displacement.	No risk of introduction of INNS during operation as water will only be circulated between Loch Ness and the Headpond. However, prevention control measures should still be followed due to risk from maintenance access. Please refer to **Chapter 9 Aquatic Ecology** of the EIA Report for further details.	Spoil management, ECoW supervision, and strict biosecurity measures to be implemented. Please refer to **Chapter 9 Aquatic Ecology** of the EIA Report for further details. Survey of the extent of the proposed cofferdam and temporary pier works in Loch Ness for the presence of INNS will be required prior to any works, and appropriate site-specific remediation measures implemented in agreement with SEPA.	Biosecurity measures implemented throughout the operation of the Proposed Development, following 'Check, Clean, Dry' principles. These will be set out in a Biosecurity Management Plan. Annual monitoring surveys for the presence of aquatic and terrestrial INNS for a period of five years after the completion of construction are to be undertaken.	No significant residual adverse impacts are predicted. Therefore, the Proposed Development would be compliant with all WFD objectives.	River Ness, Loch Dochfour and River Moriston
Fish	High		Potential impacts on Salmon and other important	LCW structure on Loch Ness shoreline could result in the abstraction or entrainment of fish. However, these adverse	Spoil management, ECoW supervision, and strict biosecurity	To avoid fish and debris entrainment, the LCW will incorporate a	Minor adverse impacts are predicted only. Therefore, the Proposed	River Ness, Loch Dochfour and River Moriston
Fish barrier	High							
Aquatic plants	High							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Phytoplankton	High		species such as Lamprey, Arctic Char and Brown Trout include direct mortality or physical injury, disruption of their migratory pathway and avoidance reaction. Please refer to **Chapter 9 Aquatic Ecology** of the EIA for further details. Watercourse crossings for temporary access Tracks and temporary site compounds, including diversion and culverting of watercourses flowing to Loch Ness, can affect resident fish populations.	impacts will be minimised by the construction of a screen with suitable mesh size resulting in a negligible impact. Rheotactic (the tendency of fish to face into an oncoming current) distraction by attracting migratory fish such as salmon from their migration path could also occur but the impact would be negligible. See **Chapter 9 Aquatic Ecology** for further information.	measures to be implemented. Please refer to **Chapter 9 Aquatic Ecology** of the EIA Report for further details. Survey of the extent of the proposed cofferdam and temporary pier works in Loch Ness for the presence of INNS will be required prior to any works and appropriate site-specific remediation measures implemented in agreement with SEPA.	screen with 12.5 mm apertures.	Development would be compliant with all WFD objectives.	
Specific pollutants	Pass							
Iron	Pass							
Ammonium	Pass							
Manganese	Pass							
Hydromorphology	High							
Morphology	High		N/A	The permanent LCW structure on the shore of Loch Ness will not alter	N/A	N/A	No significant residual adverse	River Ness and Loch Dochfour

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Overall hydrology	High			the size, shape, or morphology of the loch. However, there will be approximately 270m of bank modified from natural to reinforced. There will be some resultant loss of the marginal zone. However, given the scale of Loch Ness it is unlikely to cause any change to the WFD Status.			impacts are predicted. Therefore, the Proposed Development would be compliant with all WFD objectives.	
Water quality	Good							

4.2 WFD Assessment for Allt Saigh

Surface Water Body (name/ID/RBMP):	Allt Saigh (ID: 20278)	Current status or potential:	Good Ecological Potential
Water body length:	12.1 km	Target status or potential (2027):	Unknown
Water body area:	n/a	Protected Areas:	Non-Applicable
Heavily modified?	Heavily modified due to physical alterations to the waterbody which cannot be addressed without a significant impact on existing water storage for hydroelectricity generation.		
Summary of scheme components:	The Main Dam will cut off Allt Loch an t-Sionnaich and two of its tributaries. Its flow will then be compensated throughout construction and operation. However, ultimately Allt Loch an t-Sionnaich will lose a lot of its catchment to the Proposed Development including Loch nam Breac Dearga. There is an existing track with water crossings which will be retained to serve the Main Dam and Headpond area'		

Table 3 WFD Allt Saigh

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Overall status	Good ecological potential							
Pre-HMWB status	Moderate	None Applicable	Excavation of the Headpond will increase the potential for sediment-laden run off from spoil heaps and exposed earth. There may also be contaminated run off from spillages of oils, fuels, solvents, and other construction materials which could then enter Allt Loch an t-Sionnaich. However, there is an existing small dam and intake at NH 43892 21618. Therefore, pollutants will	Track runoff can include a range of substances that can be harmful to the water environment resulting in poor water quality, smothering habitats with fine sediment, and adversely impacting aquatic ecosystems. The quality and effects of track runoff is influenced by many parameters and is difficult to predict accurately.	Measures to manage the formation of excessive sediment in runoff, its interception and treatment will be described in an oWMP (**Appendix 10.4 oWMP**) and outline CEMP (**Appendix 3.1 oCEMP**). Measures to reduce the risk of	Not required.	No significant residual adverse impacts are predicted. Therefore, the Proposed Development would be compliant with all WFD objectives.	Allt nan Gobhar Allt Loch an t-Sionnaich and tributaries Loch an t-Sionnaich Allt Ruighe Bhacain Loch nam Breac Dearga Unnamed
Overall ecology	Moderate							
Biological elements	High							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Fish	High		reach the Allt Saigh only via the compensation flow and so impacts will be negligible. However, contaminants and sediment could be generated from use of the existing access track and water crossings. This could affect the physicochemical status of the Allt Saigh. To avoid significant impacts and the potential for non-compliance with WFD objectives, mitigation will be required.	Common pollutants include sediment/grit, dissolved and particulate heavy metals, hydrocarbons, pesticides and other organic-compounds, nutrients and litter. However, during operation the track would likely only be used to access the Proposed Development by employees/maintenance workers. Therefore, the amount of contaminated runoff would be minimal and unlikely to change the overall water quality.	chemical spillages such as bunded fuel tanks, spill kits, plant nappies on static plant, and the implementation of an Emergency Response Plan should also be implemented. An oWMP should include details of what permits and consents are required for works to waterbodies.			Water feature
Fish barrier	High							
Hydromorphology	Moderate							
Morphology	Good	None Applicable	Watercourse crossings have the potential to restrict movement of coarse sediment, which could lead to excess accumulation upstream and starvation of supply downstream that could trigger localised erosion. There are nine proposed crossings over the Allt Saigh and its tributaries. However, there is already an access track and crossing at all but one of these points and so any major new impact is unlikely. The required new crossing has the potential to generate impacts to the bed and banks of the river.	Watercourse crossings have the potential to restrict movement of coarse sediment, which could lead to excess accumulation upstream and starvation of supply downstream that could trigger localised erosion. There are nine proposed crossings over the Allt Saigh and its tributaries. However, there is already an access track and crossing at all but one of these points and so during operation there will be no additional impact.	Where there are existing crossings, it is proposed to widen the track, using a pipe culvert. There is not anticipated to be any adverse impact from Permanent Access Track upgrades, as the watercourses are already impacted by the existing constrictions. The crossings are generally on steep, stable reaches, with no excess sedimentation. Where new temporary crossings	There is not anticipated to be any adverse impact from Permanent Access Track upgrades, as the watercourses are already impacted by the existing constrictions and crossing types will be replicated during construction. During operation there will be no additional impact.	No significant residual adverse impacts are predicted. Therefore, the Proposed Development would be compliant with all WFD objectives.	Allt nan Gobhar Allt Loch an t-Sionnaich and tributaries Allt Loch an t-Sionnaich, Allt Ruighe Bhacain Loch nam Breac Dearga Unnamed Water feature
Overall hydrology	Moderate							
Modelled hydrology	Bad							
Hydrology (medium/high flows)	Bad							
Hydrology (low flows)	Bad							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
					are required, this should be a single span structure, minimising the impact to the bed and banks.			

4.3 WFD Assessment for River Enrick

Surface Water Body (name/ID/RBMP):	River Enrick - Loch Ness to Loch Meiklie (ID: 20262)	Current status or potential:	Good
Water body length:	9.9 km	Target status or potential (2027):	Unknown
Water body area:	n/a	Protected Areas:	Urquhart Bay Woods (SSSI and SAC)
Heavily modified?	No		
Summary of scheme components:	Access track and water crossings on multiple tributaries of the River Enrick.		

Table 4 WFD River Enrick

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Overall status	Good							
Pre-HMWB status	Good							
Overall ecology	Good							
Physico-Chem	High	Urquhart Bay Woods (SSSI and SAC)	Excessive fine sediments from construction, upgrade and use of watercourse crossings. This could affect the physicochemical status of the River Enrick. To avoid significant impacts and the potential for non-compliance with WFD objectives, mitigation will be required.	Track runoff can include a range of substances that can be harmful to the water environment resulting in poor water quality, smothering habitats with fine sediment, and adversely impacting aquatic ecosystems. The quality and effects of track runoff is influenced by many	Measures to manage the formation of excessive sediment in runoff, its interception and treatment are described in an oWMP (**Appendix 10.4 oWMP)** and oCEMP (**Appendix 3.1 oCEMP)**. Measures to reduce the risk of chemical spillages such	Not required.	No significant residual adverse impacts are predicted. Therefore, the Proposed Development would be compliant with all WFD objectives.	Allt Creag an Fhithich Caochan na Ruighe Duibhe Allt na Criche Allt Luirg nam Broc Drumclune Burn Unnamed Water Features
Temperature	High							
Reactive phosphorus	High							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Dissolved Oxygen	High			parameters and is difficult to predict accurately. Common pollutants include sediment/grit, dissolved and particulate heavy metals, hydrocarbons, pesticides and other organic-compounds, nutrients and litter. However, during operation the track would likely only be used to access the Proposed Development by employees/maintenance workers. Therefore, the amount of contaminated runoff would be minimal and unlikely to change the overall water quality.	as bunded fuel tanks, spill kits, plant nappies on static plant, and the implementation of an Emergency Response Plan should also be implemented. The oWMP (**Appendix 10.4 oWMP**) includes details of what permits and consents are required for works to waterbodies.			
Acidity	High							
Acid Neutralising Capacity	High							
pH	High							
Biological elements	Good							
Invertebrate animals	Good	Urquhart Bay Woods (SSSI and SAC)	During the construction of the access tracks, works may result in a reduction in water quality to the River Enrick, due to deposition or spillage of soils, sediments, oils, fuels or other construction chemicals, or through mobilisation of contamination following disturbance of contaminated ground or groundwater, or through uncontrolled site run-off. Any reduction in water quality could adversely impact invertebrate and fish communities through toxic	Track runoff can include a range of substances that can be harmful to the water environment resulting in poor water quality, smothering habitats with fine sediment, and adversely impacting aquatic ecosystems. The quality and effects of track runoff is influenced by many parameters and is difficult to predict accurately. Common pollutants include sediment/grit, dissolved and particulate heavy metals,	The oWMP (**Appendix 10.4 oWMP)** and oCEMP (**Appendix 3.1 oCEMP)** provide details on the following key areas of concern: managing the risk of pollution to surface waters and the groundwater environment from all works (including construction of foundations and dewatering of excavations); measures to control the storage, handling and	Not required.	No significant residual adverse impacts are predicted. Therefore, the Proposed development would be compliant with all WFD objectives.	Allt Creag an Fhithich Caochan na Ruighe Duibhe Allt na Criche Allt Luirg nam Broc Drumclune Burn Unnamed Water Features
Macroinvertebrates (acid)	High							
Macroinvertebrates (RiCT/WHPT)	Good							
Macroinvertebrates (ASPT)	Good							
Macroinvertebrates (NTAXA)	High							
Fish	Good							
Fish ecology	Good							
Fish barrier	High							
Aquatic plants	Good							
Macrophytes	High							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Phytobenthos (diatoms)	Good		effects, reductions in dissolved oxygen, smothering of habitat, and direct physical impacts. Fine sediments may also smoother macrophytes and diatoms and reduce the potential for photosynthesis. Impacts would occur from the upgrading of the bridge crossing the stream.	hydrocarbons, pesticides and other organic-compounds, nutrients and litter. However, during operation the track would likely only be used to access the Proposed Development by employees/maintenance workers. Therefore, the amount of contaminated runoff would be minimal and unlikely to change the overall water quality.	disposal of substances during construction; emergency procedure for how to respond to a serious pollution incident; the management of activities in, over, under and near watercourses and their floodplains and other ponds and lakes; the scope of any pre, during, and post-construction water quality or other relevant environmental monitoring; and details of what permits and consents are required for works to waterbodies.			
Specific pollutants	Pass							
Iron	Pass							
Ammonium	Pass							
Manganese	Pass							
Hydromorphology	High							
Morphology	High	Urquhart Bay Woods (SSSI and SAC)	Watercourse crossings have the potential to restrict movement of coarse sediment, which could lead to excess accumulation upstream and starvation of supply downstream that could trigger localised erosion. There are twelve proposed crossings over the River Enrick and tributaries. However, there is already an access track and crossing at these points and so any major new impact is unlikely. Should a new crossing be required, there is potential for	Watercourse crossings have the potential to restrict movement of coarse sediment, which could lead to excess accumulation upstream and starvation of supply downstream that could trigger localised erosion. There are twelve crossings over the River Enrick and tributaries. However, there is already an access track and crossing at these points and so during operation	Where there are existing crossings, it is proposed to widen the track, using a pipe culvert. There is not anticipated to be any adverse impact from Permanent Access Track upgrades as the watercourses are already impacted by the existing constrictions. Where existing sediment deposition has been noted (crossings SW21 Crossing 1, SW22 Crossing 1 and SW23	There is not anticipated to be any adverse impact from access track upgrades, as the watercourses are already impacted by the existing constrictions, and crossing types will be replicated during construction.	No significant residual adverse impacts are predicted. Therefore, the Proposed Development would be compliant with all WFD objectives.	Allt Creag an Fhithich Caochan na Ruighe Duibhe Allt na Criche Allt Luirg nam Broc Drumclune Burn Unnamed Water Features
Overall hydrology	High							
Modelled hydrology	High							
Hydrology (medium/high flows)	High							
Hydrology (low flows)	High							
Water quality	Good							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
			impacts to the bed and banks of the river.	there will be no additional impact.	Crossing 1 shown on Figure 10.4), the design of the crossing should be considered to prevent increased deposition upstream. Where new temporary crossings are required, this should be a single span structure, minimising the impact to the bed and banks.	During operation there will be no additional impact.		

4.4 WFD Assessment for River Coiltie

Surface Water Body (name/ID/RBMP):	River Coiltie (ID: 20265)	Current status or potential:	Moderate
Water body length:	17.9 km	Target status or potential (2027):	Unknown
Water body area:	n/a	Protected Areas:	Urquhart Bay Woods (SSSI and SAC)
Heavily modified?	No		
Summary of scheme components:	Temporary workers accommodation, temporary compounds, permanent compounds, access tracks and water crossings are all within the River Coiltie and its catchment		

Table 5 WFD River Coiltie

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Overall status	Moderate							
Pre-HMWB status	Moderate	Urquhart Bay Woods (SSSI and SAC)	Excessive fine sediments from construction, upgrade and use of watercourse crossings. This could affect the quality and thus biological elements of the River Coiltie. To avoid significant impacts and the potential for non-compliance with WFD objectives, mitigation will be required.	Track runoff can include a range of substances that can be harmful to the water environment resulting in poor water quality, smothering habitats with fine sediment, and adversely impacting aquatic ecosystems. The quality and effects of track runoff is influenced by many parameters and is difficult to predict accurately. Common pollutants include sediment/grit, dissolved and particulate heavy metals,	Measures to manage the formation of excessive sediment in runoff, its interception and treatment is described in the oWMP (**Appendix 10.4 oWMP)** and oCEMP (**Appendix 3.1 oCEMP)**. Measures to reduce the risk of chemical spillages such as bunded fuel tanks,	Sustainable drainage systems (e.g. ditches, swales, ponds etc.) where possible or otherwise proprietary treatment measures will be considered (e.g. filter drains, vortex flow separators).	No significant residual adverse impacts are predicted. Therefore, the Proposed Development would be compliant with all WFD objectives.	Divach Burn Allt Coire an Ruighe Allt Glas Beag Allt Glas Mor Loch nan Oighreagan Caochan and Loch Dhuibh Unnamed Water Features
Overall ecology	Moderate							
Biological elements	High							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Fish	High			hydrocarbons, pesticides and other organic-compounds, nutrients and litter. However, during operation the track would likely only be used to access the Proposed Development by employees/maintenance workers. Therefore, the amount of contaminated runoff would be minimal and unlikely to change the overall water quality.	spill kits, plant nappies on static plant, and the implementation of an Emergency Response Plan should also be implemented. An oWMP should include details of what permits and consents are required for works to waterbodies.	The Access Tracks will have swales to capture and treat any runoff. The design of surface water drainage systems, incorporating appropriate attenuation and treatment measures, will be undertaken post-consent as part of a Detailed Design Strategy. This could be prepared pursuant to a planning condition. The type of treatment measure and the number of treatment components will be determined during detailed design. This will be informed by a water quality risk assessment applying the Simple Index		
Fish barrier	High							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
						Approach described in C753, The SuDS Manual.		
Hydromorphology	Moderate							
Morphology	High	Urquhart Bay Woods (SSSI and SAC)	Watercourse crossings have the potential to restrict movement of coarse sediment, which could lead to excess accumulation upstream and starvation of supply downstream that could trigger localised erosion. There are five crossings over River Coiltie and its tributaries. However, there is already an access track and crossing at these points and so any major new impact is unlikely. Should a new crossing be required, there is the potential for impacts to the bed and banks of the river. A new bridge over the River Coiltie is proposed, which will be a bottomless culvert structure. There may be some loss of the natural bank due to the construction of this structure. Within the context of the size of this watercourse and general lack of hydromorphology pressures, this will be a minor impact and is unlikely to affect the WFD status.	Watercourse crossings have the potential to restrict movement of coarse sediment, which could lead to excess accumulation upstream and starvation of supply downstream that could trigger localised erosion. There are five crossings over River Coiltie and its tributaries. However, there is already an access track and crossing at these points and so during operation there will be no additional impact. The new bottomless culvert on the River Coiltie will be designed to not disrupt the movement of coarse sediment.	Where there are existing crossings, it is proposed to widen the track, using a pipe culvert. There is not anticipated to be any adverse impact from access track upgrades, as the watercourses are already impacted by the existing constrictions. No significant deposition or erosion was noted upstream or downstream, indicating that the existing crossings are not currently causing major geomorphological impacts. For the new crossing, a bottomless culvert is proposed, minimising the impact to the bed.	There is not anticipated to be any adverse impact from access track upgrades, as the watercourses are already impacted by the existing constrictions and crossing types will be replicated during construction. The new River Coiltie crossing will be designed to minimise impact on the bed and not disrupt sediment transport. During operation there will be no additional impact from the watercourse crossings.	No significant residual adverse impacts are predicted. Therefore, the Proposed Development would be compliant with all WFD objectives.	Divach Burn Allt Coire an Ruighe Allt Glas Beag Allt Glas Mor Loch nan Oighreagan Caochan an Loch Dhuibh Unnamed Water Features
Overall hydrology	Moderate							
Modelled hydrology	Poor							
Hydrology (medium/high flows)	Poor							
Hydrology (low flows)	High							

4.5 WFD Assessment for Inverness Groundwater Body

Water Body (name/ID/RBMP):	Inverness (ID 150670)	Current status or potential:	Good
Water body length:	n/a	Target status or potential (2027):	Unknown
Water body area:	413.7 km^2	Protected Areas:	Urquhart Bay Woods (SSSI and SAC) and within a groundwater drinking protected zone
Heavily modified?	n/a		
Summary of scheme components:	Potential impacts of drilling of the Power Cavern and tunnels through drill and blast techniques.		

Table 6 WFD Inverness Groundwater Body

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Overall status	Good							
Quantitative status	Good							
Saline Intrusion	Good	Within a Drinking Water Protected Area (Groundwater) and Urquhart Bay Woods (SSSI and SAC)	Groundwater abstraction associated with any excavations and the drilling associated with the Power Cavern and tunnels. Abstraction could cause groundwater	The ongoing presence and operation of the tunnels is anticipated to have a negligible impact on groundwater levels as the tunnel design	Tunnel construction methodology - the tunnel will be progressively lined as boring progresses, minimising the impacts to surrounding groundwater.	Some monitoring of water ingress to Power Cavern may also be required during the operational phase. Continuous monitoring of observation boreholes for	No significant residual adverse impacts are predicted. Therefore, the Proposed Development would be compliant with all WFD objectives.	Northern Highlands GW Body. However, the Northern Highland GW Body is essentially impermeable, and so impacts are extremely unlikely
Surface Water Interaction	Good							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Water balance	Good		to be redirected to the abstraction point rather than its natural flow direction. Drilling of the Power Cavern and tunnel could impede groundwater flow. Covering aquifer recharge zones with impermeable surfaces for access tracks, compounds, dams, and other design aspects.	prevents migration of groundwater between the tunnels and the surrounding bedrock. The Headpond will be a largely 'closed' system and will not affect groundwater resources.	A monitoring programme is to be implemented, including groundwater level and quality monitoring, linked to a predefined Construction Groundwater Control Strategy. Monitoring in observation boreholes of groundwater quality around the Headpond, both up-gradient and down-gradient to prove any deterioration.	water levels around the Headpond, as part of the WQMP for the project.		
Chemical status	Good							
SW Interaction	Good	Within a Drinking Water Protected Area (Groundwater) and Urquhart Bay Woods (SSSI and SAC)	Contamination could infiltrate the aquifer from the following sources: direct contamination from works associated with drilling	The Headpond and power tunnels will be a 'closed' system and will not affect groundwater quality.	Tunnel construction methodology - the tunnel will be progressively lined as boring progresses, minimising the impacts	Continuous monitoring of observation boreholes for water quality around the Headpond.	No significant residual adverse impacts are predicted. Therefore, the Proposed Development would be compliant with	Northern Highlands GW Body. However, the Northern Highland GW Body is essentially impermeable, and so impacts
Specific pollutants	Good							
Chromium	Good							
Zinc	Good							
Manganese	Good							
Other Substances	Good							
Nitrate	Good							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Priority substances	Good		the Power Cavern and tunnels; and indirect infiltration from contaminated groundwater in the overlying superficial aquifers.		to surrounding groundwater. A monitoring programme is to be implemented, including groundwater level and quality monitoring, linked to a predefined Construction Groundwater Control Strategy. At the Headpond, monitoring in observation boreholes of groundwater quality around the Headpond may be required.		all WFD objectives.	are extremely unlikely
Cadmium	Good							
Lead	Good							
Drinking Water Protected Area	Good							
Priority substances	Good							
Atrazine	Good							
Simazine	Good							
Other Substances	Good							
Epoxiconazole	Good							
Nitrate	Good							
Chemical General tests	Good							
Priority substances	Good							
Atrazine	Good							
Simazine	Good							
Trichloroethene	Good							
Benzene	Good							
Specific pollutants	Good							
Chromium	Good							
Other Substances	Good							
Electrical Conductivity	Good							
Epoxiconazole	Good							
Nitrate	Good							
Free Product (from Total Petroleum Hydrocarbons (TPH))	Good							
Vinyl Chloride	Good							
Water quality	Good							

4.6 WFD Assessment for Northern Highland Groundwater Body

Water Body (name/ID/RBMP):	Northern Highlands (ID: 150701)	Current status or potential:	Good
Water body length:	n/a	Target status or potential (2027):	
Water body area:	9382.3 km^2	Protected Areas:	Within a groundwater drinking protected zone
Heavily modified?	n/a		
Summary of scheme components:	Potential impacts of drilling of the Power Cavern and tunnels through drill and blast techniques. Excavation of Headpond area.		

Table 7 WFD Northern Highland Groundwater Body

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Overall status	Good							
Quantitative status	Good							
Saline Intrusion	Good	Within a Drinking Water Protected Area (Groundwater)	Groundwater abstraction associated to any excavations and the drilling associated with the Power Cavern and tunnels. Abstraction could cause groundwater to be redirected to the abstraction point rather than its natural flow direction. Drilling of the Power Cavern	The ongoing presence and operation of the tunnels is anticipated to have a negligible impact on groundwater levels as the tunnel design prevents migration of groundwater between the	Tunnel construction methodology - the tunnel will be progressively lined as boring progresses, minimising the impacts to surrounding groundwater. A monitoring programme is to be implemented, including groundwater level and quality monitoring, linked to a predefined Construction Groundwater Control Strategy. At the	Some monitoring of water ingress to the Power Cavern may also be required during the operational phase. Possible continued monitoring of observation boreholes for water levels	No significant residual adverse impacts are predicted. Therefore, the Proposed Development would be compliant with all WFD objectives.	The Inverness GW body
SW Interaction	Good							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Water balance	Good		and tunnel could impede groundwater flow. Covering aquifer recharge zones with impermeable surfaces for access tracks, compounds, dams, and other design aspects.	tunnels and the surrounding bedrock. The Headpond will be a 'closed' system and will not affect groundwater resources.	Headpond, monitoring in observation boreholes of groundwater quality around the Headpond may be required.	around the Headpond.		
Chemical status	Good							
SW Interaction	Good	Within a Drinking Water Protected Area (Groundwater)	Contamination could infiltrate the aquifer from the following sources: direct contamination from works associated with drilling the Power Cavern and tunnels; excavation to bedrock at the tunnel portals and the Headpond borrow pit could introduce a pathway; and indirect infiltration from contaminated groundwater in the overlying superficial aquifers. The aquifer is essentially impermeable, and so it is unlikely that there will be any major impacts.	The Headpond and tunnels will be a 'closed' system and will not affect groundwater quality.	Tunnel construction methodology - the tunnel will be progressively lined as boring progresses, minimising the impacts to surrounding groundwater. A monitoring programme is to be implemented, including groundwater level and quality monitoring, linked to a predefined Construction Groundwater Control Strategy. At the Headpond, monitoring in observation boreholes of groundwater quality around the Headpond may be required.	Possible continued monitoring of observation boreholes for water quality around the Headpond.	No significant residual adverse impacts are predicted. Therefore, the Proposed Development would be compliant with all WFD objectives.	The Inverness GW body
Specific pollutants	Good							
Chromium	Good							
Zinc	Good							
Manganese	Good							
Other Substances	Good							
Nitrate	Good							
Priority substances	Good							
Cadmium	Good							
Lead	Good							
Drinking Water Protected Area	Good							
Priority substances	Good							
Atrazine	Good							
Simazine	Good							
Other Substances	Good							
Epoxiconazole	Good							
Nitrate	Good							
Chemical General tests	Good							

WFD Parameter	Current Status (2023)	Description of other Protected Areas objectives	Brief description of impact		Brief description of mitigation measures		Residual impacts and WFD compliance	Adjacent waterbodies
			Construction	Operation	Construction	Operation		
Priority substances	Good							
Atrazine	Good							
Simazine	Good							
Trichloroethene	Good							
Benzene	Good							
Specific pollutants	Good							
Chromium	Good							
Other Substances	Good							
Electrical Conductivity	Good							
Epoxiconazole	Good							
Nitrate	Good							
Free Product	Good							
Vinyl Chloride	Good							
Water quality	Good							

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