Beinn Wind Farm Ghlas Repowering EIA Report Technical Appendix 8.7: Watercourse Crossing Inventory and Infrastructure within 50 m of a Surface Water Feature

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1 Introduction

The infrastructure of the Proposed Development will require approximately 12.83 km site access and internal tracks of which 2.71 km is new access track (1.6 km floating) with associated new watercourse crossings and 8.52 km is existing access track and watercourse crossings which would need to be upgraded. The track layout has been designed to avoid watercourses and use existing access tracks where possible, with a preference for crossing of smaller scale watercourses or replacing existing crossings that currently impede fish passage or restrict peak flows.

This appendix provides an inventory of information on each watercourse crossing including scale, dimensions, bedload, vegetation and other characteristics, along with the proposed type of crossing to be installed. At design phase these crossings will be sized to allow the 1 in 200 year return period flow event plus allowance for climate change and a freeboard.

This appendix should be read in conjunction with EIA Report **Chapter 8: Geology, Hydrology, Hydrogeology and Peat** of the EIA Report**, Figures 8.6a-c** in Volume 3 of the EIA Report and **Chapter 2: Project Description** of the EIA Report.

2 Hydrological Context

The Site and the Site Access is located within three main surface water catchments: The River Nant, River Nell/Foechan Mhor and the Allt Nathais.

The majority of the Site is within the River Nant and River Nell/Foechan Mhor catchments with The majority of the Site Access within the Allt Nathais catchment.

The majority of the Site drains to the south within the River Nant catchment via Eas Ruadh and un-named tributaries of the Laggan Burn, the Allt Carnaich and the Garbh Allt into Loch Nant. Loch Nant discharges to the River Nant that flows northwards to discharge to Loch Etive, north of Taynuilt.

The northern section of the Site drains to south via un-named tributaries of River Lonan which flows west to Loch Nell before discharge as River Nell/Foechan Mhor before discharging to Loch Foechan near Kilmore.

The Site Access mostly drains north to the Allt Nathais catchment which discharges to Loch Etive north of the Application Boundary.

There are three small lochans within the site all located to the north or north west of the Carn Cairbhre summit.

There are no flow records for the watercourses within the Site as catchments within the Site are less than 10 km^2 in area.

The watercourses and waterbodies are shown on **Figures 8.6a to 8.6c** of the EIA Report**.**

3 Legislative Context

The water environment includes wetlands, rivers, lochs, transitional waters (estuaries), coastal waters and groundwater. The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (known as CAR), specify that it is an offence to undertake the following activities without a CAR authorisation:

- Discharges to all wetlands, surface waters and groundwater (replacing the Control of Pollution Act 1974 (CoPA));
- Disposal to land (replacing the Groundwater Regulations 1998);
- Abstractions from all wetlands, surface waters and groundwaters;
- Impoundments (dams and weirs) of rivers, lochs, wetlands and transitional waters; and
- Engineering works in inland waters and wetlands.

Watercourse crossings (engineering works in inland waters and wetlands) come under Section 6 of CAR. Three different types of authorisation under CAR allow for proportionate and risk-based regulation. The authorisation process operates at three levels which are:

- General Binding Rules;
- Registration; and
- Licence.

These levels cover activities with increasing potential impact upon the environment. Minor watercourses, which do not feature on the 1:50,000 scale Ordnance Survey mapping, are not within the remit of CAR regulations. However, these minor watercourse crossings have also been considered within this report.

It would be the objective of the Applicant to ensure that all activities remain within the General Binding Rules (Engineering Activities) identified in The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended): A Practical Guide, Version 9.3, June 2023 (SEPA). The applicable Engineering Activities General Binding Rules (GBR) and Registrations that this application shall adhere to are as follows:

- General Binding Rule 6 – Minor bridges with no construction on bed or banks;
- General Binding Rule 8 – Controlling bank erosion by green bank reinforcement or re-profiling;
- General Binding Rule 9 – Operating any vehicle, plant or equipment (machinery) when undertaking other GBR activities (which includes GBR 6 and 8).
- Registration – Bridges with no construction on bed and <20 m of total bank affected (open-based culverts would be anticipated to fall within this category);
- Registration – Where cables are not appropriately located to cross water channels via newly installed track infrastructure, it would be anticipated that a Registration would be required, as cables would be anticipated being installed via isolated open-cut technique, due to small channel size; and,

- Simple Licence – for all other bridges, fords and causeways, such as those with construction on bed and greater than 20 m of total bank affected. Larger culverts may fall within this category.

Should activities be determined to be out with the above GBR and Registration authorisations, it would be appropriate to consider a licence application. The SEPA Regulatory Methods for Engineering Activities (SEPA, 2019) lists conservation, environmental standards for morphology and good practice as tests for any licence application. During the determination, SEPA shall consider the specific location, type, size and existing water quality of the local water features.

A Construction Site Licence is anticipated to be required, in accordance with CAR. This application process shall be undertaken pre-construction, providing supplementary information to that available at the EIA Report stage.

A large and complex construction project licence authorisation from SEPA will be required as it is a development project that undertakes one or more ”controlled activity” including the discharge of water run-off from a construction site to the water environment) and is:

- An onshore electricity generating station, wind farm or power station with a capacity of greater than 50 megawatts;
- covers an area greater than 4 hectares;
- contains a road (or track) greater than 5 kilometres in length;
- includes land with an area greater than 1 hectare that has a slope more than 25 degrees; and,
- includes road (or track) with a length greater than 500 metres that has a slope more than 25 degrees.

The SEPA complex construction licence must be applied for and be granted before the activity can take place, and will form as a suspensive planning condition to any consent granted.

4 Desk Study

The desk study consisted of a review of the information regarding the Proposed Development, principally involving an examination of the proposed track layout and the identification of watercourses marked on the OS 1:50,000 scale mapping which would require crossings, under the CAR Regulations. Crossings of minor watercourses were also identified at OS 1:25,000 and 1:10,000 scale mapping or less, where possible. This information informed the design to minimise crossing locations of all mapped watercourses.

5 Walkover Surveys

Subsequent to the initial desk study, walkover surveys of the site were conducted in March 2023 and October 2023, during which the identified crossings were visited to obtain specific information about each location and any further significant drainage crossings or infrastructure within 50 m of a water feature was recorded. Photographs and detailed field notes were taken reporting channel and valley dimensions, channel substrate and type of either the existing or

proposed crossing. A hand-held GPS unit was used to obtain locations with greater than 5 m accuracy.

6 Ecological Provision

For each crossing, there is provision to indicate the likelihood of the watercourse being used by mammals, principally otters, water vole and fish. Where mammal or migratory fish presence is confirmed or suspected, appropriate design features will be included in the crossing design. These may include incorporation of ledges or additional dry passages to allow passage at high water levels, in-channel baffles or low water channels to aid fish passage, and other design features appropriate for the crossing location. Track design has considered good practice guidance and recommendations in the Design Manual for Roads and Bridges (Highways Agency, 2020).

A 50 m hydrological buffer has been applied to all infrastructure except where watercourse crossings are required, with track construction minimised within this buffer. There are a total of twelve locations where proposed track upgrade activities encroach on this 50 m buffer, and three locations where proposed new infrastructure encroach on the 50 m buffer. These locations include part of Temporary Construction Compound 1 and 2 a >100m length along an ephemeral drain not shown on OS mapping. These are detailed in **Table 2** below.

7 Watercourse Crossings

A total of 26 watercourse crossings are required for the Proposed Development. Of these, 22 are existing crossings to be reused, extended/upgraded or replaced and four are new watercourse crossings.

The new crossings comprise of four 1:50,000 scale OS mapping watercourses.

Of the 22 existing crossings to be re-used, upgrade/extended or replaced, one is a single span crossing and 21 are culverted crossings, 15 are watercourse crossings shown on the 1:50,000 scale OS Mapping and six are of watercourses shown on the 1:25,000 scale OS mapping and one is shown on 1:10,000 OS mapping (minor crossing).

All proposed watercourse crossings are listed in **Table 1** and **2** and shown on **Figure 8.6a-8.6c** of the EIA Report.

The number of watercourse crossing have been limited where possible, and where required will be designed to improve on existing crossings to improve habitats and fish migration, where possible. The replacement of existing culverted crossings with bottomless arches or box crossing could be beneficial to improve migratory fish passage and otter passage particularly along the section of existing access tracks where fish are more likely to be present.

Watercourse crossings will be subject to appropriate SEPA CAR licencing and will be designed to allow the conveyance of a 0.5% AP (1 in 200 year) flow event plus an allowance for climate change and freeboard.

Table 1: Watercourse Crossing Inventory

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
WC1	196878	732418	Unnamed 1:25K scale tributary to River Luachragan	Start of existing Site Access track to be upgraded	Existing Plastic culvert crossing, Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Plastic culvert ~30 cm diameter with drop fall downstream. Channel dimensions: ~0.5 x 0.2 m. Valley dimensions: U-shaped valley with flat floodplain ~10 m wide bounded by road verge on north side. Wide SEPA flood zone. Substrate: Pebbles and gravel. Existing culvert limiting fish and mammal passage, beneficial to replace.
 Crossing Location	 Downstream	 Upstream				
WC2	196878	732418	River Luachragan, 1:50K scale	Fearnoch Forestry existing Site Access track to be upgraded	Existing Single Span bridge crossing Upgrade or replace, ideally with abutments set back further from the channel.	Existing bridge crossing ~3.5 m length, wood sides with ~2.5 m x 2.5 m concrete abutments within watercourse channel. Channel Dimensions: ~3.5 m x 0.3 m. Valley Dimensions: Flat bottomed U-shape valley with flood plain. SEPA flood zone, wider immediately upstream and downstream. Substrate: Bedrock, cobbles, gravel and sand. Allowing fish, constraining geomorphology / flow and otter passage.

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
 Bridge  Crossing Location  Crossing Location Downstream 						
WC3	197238	731323	Eas na Làraiche Mòire, 1:50K scale	Fearnoch Forestry existing Site Access track to be upgraded	Existing Culvert crossing Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Existing large ~1.3 m diameter culvert with drop downstream. Channel dimensions: ~1.25 m wide x 0.15 m depth. Valley dimensions: Steep sided V-shaped valley with steep gradient downstream. Substrate: Bedrock and gravel. Existing culvert limiting fish and mammal passage, beneficial to replace.
 Crossing Location upstream  Crossing location downstream  Downstream 						

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
WC4	197199	730306	Allt an Taillir, 1:50K scale	Fearnoch Forestry existing Site Access track to be upgraded	Existing Culvert crossing Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Existing ~0.5m plastic culvert with drop fall. Channel dimensions: ~0.8 m wide x 0.3 m depth. Valley dimensions: U-shaped valley with floodplain upstream, downstream shallow V-shaped valley adjacent to existing track side. SEPA Surface Water flooding upstream. Confluence with tributary of Allt an Taillir running alongside track. Substrate: Gravel, pebbles. Existing culvert limiting fish and mammal passage, beneficial to replace.
 Upstream	 Crossing Location Upstream	 Crossing Location Downstream	 Downstream			
WC5	197051	729799	Allt na Seabhaig. 1:50K scale	Fearnoch Forestry existing Site Access track to be upgraded	Existing Culvert Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Existing deformed ~1 m diameter plastic culvert with plunge pool due to drop fall. Channel dimensions: ~2 m wide x 0.5 m depth. Valley dimensions: Steep V-shaped valley upstream, downstream flatter U-shaped valley. Substrate: Gravel, pebble and boulders. Existing culvert limiting fish and mammal passage, beneficial to replace.

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
 Upstream			 Crossing Location Upstream	 Crossing Location Downstream	 Downstream	
WC6	197469	729257	Unnamed tributary, 1:25K scale, of Allt na Seabhaig	Southern boundary of Fearnoch Forestry existing Site Access track to be upgraded	Existing culvert crossing Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Existing 0.3 m diameter plastic culvert with 0.3 m drop fall. Channel dimensions: ~0.5 m x 0.2 m. Valley dimensions: Flat U-shaped with peaty banks. Drain, likely manmade cut straight into peaty/silty substrate. Substrate: Peat/silt. Existing culvert limiting fish and mammal passage, beneficial to replace.
 Upstream			 Crossing Location	 Downstream		
WC7	197503	729172	Unnamed watercourse 1:50K scale, discharges to Lochan	Existing Site Access track north of Glen Lonan Road to be upgraded	Existing culvert crossing Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Existing plastic culvert with ~0.2 m drop fall. Channel dimensions: ~0.3 m x 0.15 m. Valley dimensions: relatively flat valley with peaty banks. Substrate: Gravel, pebbles. Existing culvert limiting fish and mammal passage, beneficial to replace.

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
 Crossing Location Upstream	 Crossing Location Downstream	 Downstream				
WC8	197841	728806	Unnamed tributary to Allt Nathais, 1:50K scale	Existing Site Access track north of Glen Lonan Road to be upgraded	Existing culvert crossing Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Existing corrugated metal culvert ~0.6 m diameter with ~0.5 m drop fall. Channel dimensions: ~0.7m x 0.05 m. Valley dimensions: relatively flat valley through fields Substrate: Gravel, pebbles. Existing culvert limiting fish and mammal passage, beneficial to replace.
 Downstream	 Downstream drop fall	 Crossing	 Upstream channel			
WC9	197972	728831	Unnamed tributary of Allt Nathais, 1:25K scale	Existing Glen Lonan Road (public road)	Existing culvert crossing Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Existing plastic culvert with ~0.2 m drop fall. Channel dimensions: ~ 0.5 m x.0.1 m Valley dimensions: ~1.5 m x 0.6 m linear field drain Substrate: Gravel, pebbles and sand. No fish. Possible PWS piping in area.

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
 Crossing Location Upstream  Crossing Location Downstream  Downstream 						
WC10	198068	728914	Unnamed tributary of Allt Nathais, 1:50K scale	Existing Glen Lonan Road (public road)	Existing bottomless box culvert with bend Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Existing bottomless box culvert, concrete walls, linearised Channel dimensions: ~2.2 m x 0.15 m depth Valley: ~2.5 m x 1.25 m, manmade at crossing, altered Substrate: Gravel, pebbles. Existing culvert downstream limiting fish and mammal passage, beneficial to replace. Possible PWS piping in area
 Crossing Location Upstream  Crossing Location Downstream  Downstream 						

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
WC11	198195	728896	Unnamed tributary of Allt Nathais (via lochan), 1:25K scale	Existing Glen Lonan Road (public road)	Existing culvert crossing Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Existing 0.2 m plastic culvert Channel dimensions: Flow over vegetation with no defined channel Valley dimensions: Flat bottomed. Substrate: Vegetation and some gravel downstream. Unsuitable for fish.


Upstream


Crossing Location Upstream


Crossing Location Downstream


Downstream

WC12	198142	728537	Unnamed tributary to the Allt Nathais,1:50K scale, upstream of WC10	Existing track to be upgraded for Site Access. South of Glen Lonan Road (public road)	Existing culvert crossing Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Large 1.8 m plastic culvert with drop fall downstream, large rock abutments and gabion baskets. Channel dimensions: ~1.5 m x 0.35 m. Valley dimensions: V-shaped and steep gradient wooded valley upstream, incised with flood plain. Wider more open V-shaped valley downstream. Substrate: Bedrock, Gravel, boulders and pebbles. Culvert limiting fish passage and mammal passage, beneficial to replace.


Upstream


Crossing Location Upstream


Crossing Location Downstream


Downstream

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
WC13	198114	728222	Unnamed tributary of Allt Nathais, 1:25K scale	Existing track to be upgraded for Site Access. South of Glen Lonan Road (public road)	Existing culvert Use existing, lengthen or replace with culvert	Existing plastic culvert, ~30 cm diameter, in reeds and boggy ground. Channel dimensions: ~0.2 m x 0.1 m, vegetated, poorly defined, almost dry. Valley dimensions: Shallow V-shaped. Substrate: Vegetation. Unsuitable for fish.

Upstream

Crossing Location

Downstream

WC14	198284	727365	Unnamed tributary to the Allt Nathais, 1:50K scale' upstream of WC10 and WC12	New track section adjacent to existing Site Access track. South of Glen Lonan Road (public road)	New single span or bottomless arch / box culvert crossing.	Existing plastic culvert, ~ 30 cm diameter to be removed. Channel dimensions: ~0.3 m x 0.1 m. Valley dimensions: Vegetated, narrow and steep V-shaped valley. Substrate: Bedrock, gravel and vegetation. Unsuitable for fish.

Upstream

Crossing Location

Downstream

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
WC15	198436	726786	Unnamed tributary to the Allt Nathais, 1:50K scale	Existing Site Access track to be upgraded south of Glen Lonan Road (public road)	Existing culvert Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Existing double plastic culvert crossing to be replaced. Channel dimensions: ~0.3 m x 0.15 m. Valley dimensions: Relatively flat bottomed with meandering shallow channel. Substrate: Gravel and vegetation. Culvert limiting fish passage and mammal passage, beneficial to replace.
 Upstream	 Crossing Location Upstream	 Crossing Location Downstream	 Downstream			
WC16	198436	726077	Unnamed tributary to Laggan Burn, 1:50K	New on Site access track Construction compound to T01.	New watercourse crossing >5m wide Single span or bottomless arch / box culvert.	New watercourse crossing required Channel dimensions: 2.5 m x 0.5 m, deeply incised channel with confluence of diffuse flows. Bridge width will be >5 m if built on rock abutments, or less if routed up the diffuse watercourse. Valley dimensions: ~3m deep meandering V-shaped valley, some erosion. valley has steep rocky banks upstream of confluence. Substrate: Bedrock and boulders Provision should be made for fish and mammal passage.

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
    Upstream Crossing Location						
WC17	198657	726054	Unnamed tributary to Laggan Burn, 1:50K scale, downstream of WC16, WC20 and WC23	Existing on Site track to be upgraded T01 to substation.	Existing crossing Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Existing double plastic culvert ~0.5 m and 0.3 m diameter, small drop fall. Channel dimensions: ~1.8 m x 0.2 m. Valley dimensions: Gentle V-shaped, steeper upstream. Moderately steep with meandering, incised banks downstream. Substrate: Pebbles and gravel. Inhibiting fish and mammal passage, beneficial to replace.
     Upstream Crossing Location Upstream Crossing Location Downstream Downstream						
WC18	198420	726002	Small unnamed, 1:10K scale watercourse	Existing on Site track to be upgraded Substation to T08	Existing culverted crossing Replace with culvert, bottomless arch or box culvert	Existing collapsed plastic culvert ~0.3 m diameter. Channel dimensions: ~0.2 m x 0.1 m. Valley dimensions: U-shaped valley with wide floodplain. Substrate: Silt/peat. Unsuitable for fish.

<table>
<tr><th rowspan="2">ID</th><th colspan="2">Grid Reference</th><th rowspan="2">Watercourse Name</th><th rowspan="2">Infrastructure Location</th><th rowspan="2">Type of Crossing</th><th rowspan="2">Description</th></tr>
<tr><th>Easting</th><th>Northing</th></tr>
<tr><td colspan="7">     

Upstream Crossing Channel Downstream Downstream</td></tr>
<tr><td>WC19</td><td>198144</td><td>726064</td><td>Unnamed tributary to Laggan Burn 1:25K scale</td><td>Existing on Site track to be upgraded Track Substation to T08.</td><td>Existing culverted crossing

Replace with culvert, bottomless arch or box culvert</td><td>Collapsed culvert no longer visible with water flowing through boulder and rubble fill of track embankment.
Channel dimensions: 0.2 m x 0.1 m.
Valley dimensions: Gentle V-shaped valley with poorly defined channel and diffuse flow.
Substrate: Silt, pebbles and vegetation
Unsuitable for fish.</td></tr>
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Upstream Crossing Location Downstream Downstream</td></tr>
</table>

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
WC20	198042	726062	Unnamed tributary to Laggan Burn, 1:50K scale,	Existing on Site track to be upgraded Track Substation to T08. Upstream of WC16 and WC17, downstream of WC23	New crossing New single span or bottomless arch / box culvert crossing. Old culvert crossing to be removed.	Higher energy stream with plunge pool and eroded banks upstream of crossing restriction of flow by culvert. Channel dimensions:~ 0.3 m x 0.2 m. Valley dimensions: V-shaped with steep gradient upstream, downstream U-shaped and meandering with flood plain. Substrate: Pebbles and bedrock. Inhibiting fish and mammal passage, beneficial to replace.


Upstream


Crossing Location Upstream


Crossing Location Downstream


Downstream

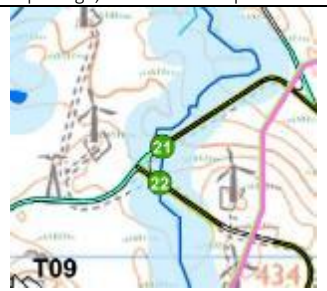
WC21	197607	726179	Unnamed tributary of River Lonan, 1:50K	Existing on Site track to be upgraded Track southwest of T10, downstream of WC22	Existing culvert crossing Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Existing ~0.4 m plastic culvert with drop fall downstream and stone-filled catch pit upstream. Narrow, vegetated channel in peat. Channel dimensions: ~0.35 m x 0.4 m. Valley dimensions: Shallow V-shaped valley Substrate: Pebbles. Inhibiting fish and mammal passage, beneficial to replace.


Upstream


Crossing Location Upstream


Crossing Location Downstream


Downstream



ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
WC22	197603	726121	Unnamed tributary of River Lonan, 1:50K scale	Existing on Site track to be upgraded Start of track towards T02, T03 and T04, upstream WC21.	Existing culverted crossing To be replaced with bottomless arch or box culvert	Existing plastic culvert ~0.3 m with drop fall. Channel dimensions: ~0.4 m x 0.2 m Valley dimensions: Wide flat-bottomed valley upstream with poorly defined channel in peat, downstream shallow v-shaped valley. Substrate: Pebbles. Inhibiting fish and mammal passage, beneficial to replace.


Upstream


Crossing Location Upstream


Crossing Location Downstream


Downstream

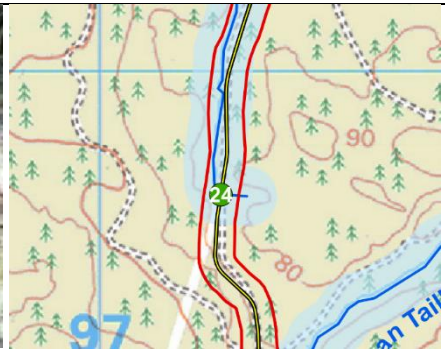
WC23	197870	725767	Unnamed tributary of Laggan Burn, 1:50K scale	Start of existing on Site track towards T02, T03 and T04, upstream WC20m WC16, WC17.	New crossing New single span or bottomless arch / box culvert crossing. Old culvert crossing to be removed.	Culvert not visible under vegetated overburden. Channel dimensions: ~0.2 m x 0.1 m. Valley dimensions: Diffuse flow through marsh upstream, downstream narrow channel in wide flat-bottomed valley. Substrate: Vegetation and silt. Unsuitable for fish.

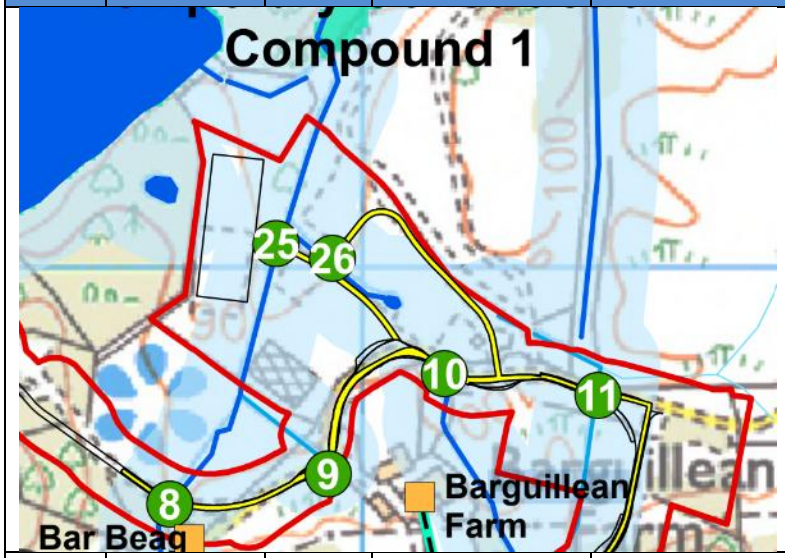

Upstream


Crossing Location Upstream


Crossing Location Downstream


Downstream

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
WC24	197200	730795	Eas na Làraiche Mòire, 1:50K scale	Fearnoch Forestry existing Site Access track to be upgraded	Existing Culvert crossing Use existing, lengthen or replace with single span or bottomless arch / box culvert.	Existing ~0.2 m culvert overgrown Channel dimensions: Defined narrow drain in peaty soil and gravel Valley dimensions: Low gradient V-shape, forestry drainage Substrate: Gravel, sand, peaty soil and vegetation Channel unsuitable for fish.
 Upstream			 Crossing Location		 Downstream	
WC25	197929	729020	Unnamed Watercourse, 1:50K scale	Existing track towards Construction Compound 1	Existing Culvert crossing which does not require widening.	2m deep channel and 2m wide. Substrate is rock and gravel. Moderate gradient.

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
						
WC26	197972	729005	Unnamed Watercourse, 1:50K scale	Existing track towards Construction Compound 1	Existing Culvert crossing which does not require widening.	2m deep channel and 2m wide. Substrate is rock and gravel. Moderate gradient.

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				

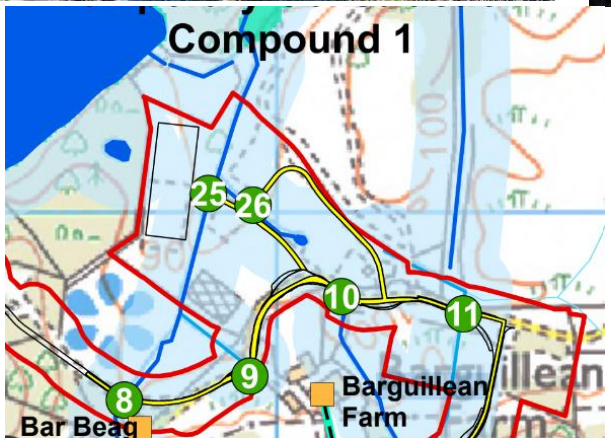


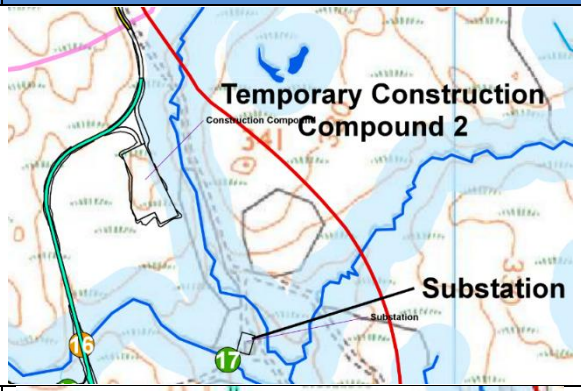
Table 2: Infrastructure Located within 50 m Surface Water Features (from north to south)

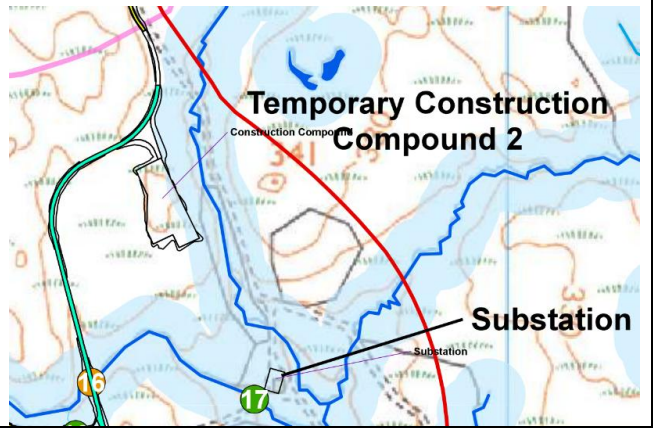
Watercourse	Infrastructure within buffer	Comments	Map Section
River Luachragan	Approximately 280 m of existing Site Access track within Fearnoch forest area, to east of WC2.	The existing Site Access track is approximately 7 m from the River Luachragan at its closest point with very steep gradients down to the watercourse.	
Eas na Làraiche Mòire	Approximately 725 m of the Site Access track within the Fearnoch Forest area. Includes bend north of WC3 and stretch of track south of WC3.	The Site Access track is approximately 22 m from the Eas na Làraiche Mòire at its closest point.	

Watercourse	Infrastructure within buffer	Comments	Map Section
Allt an Taillir	Approximately 385 m of the Site Access track within the Fearnoch Forest area. Includes stretch of track north of WC4 and bend south of WC4.	The Site Access track is approximately 8 m from the Allt nan Taillir at its closest point. Crossing location is within high risk SEPA surface water flood risk zone.	
Allt na Seabhaig	Approximately 390 m of the Site Access track within the south of the Fearnoch Forest area extending west and east from WC5.	The Site Access track is approximately 8 m from the Allt na Seabhaig at its closest point.	
Unnamed tributary to Allt na Seabhaig	Approximately 263 m of the Site Access track within the south of the Fearnoch Forest area west of WC6.	The Site Access track is approximately 5 m from the tributary to the Allt na Seabhaig at its closest point.	

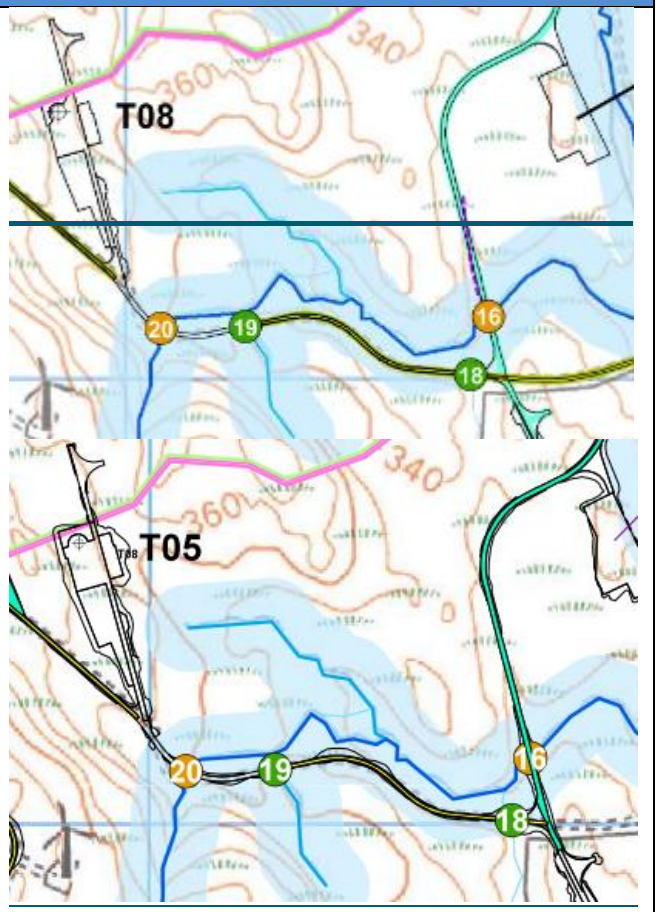
Watercourse	Infrastructure within buffer	Comments	Map Section
Unnamed tributary to Allt Nathais	Bellmouth junction between Barguillean Farm Site Access track and Glen Lonan Road east of WC11. 1,460 m^2 within buffer.	Section of bellmouth is overlies existing watercourse at the watercourse crossing location.	
Unnamed tributary to the Allt Nathais	Approximately 188 m of existing Site Access track south of the Barguillean Farm and north of WC12.	The Site Access track is approximately 13 m from the watercourse at its closest point.	

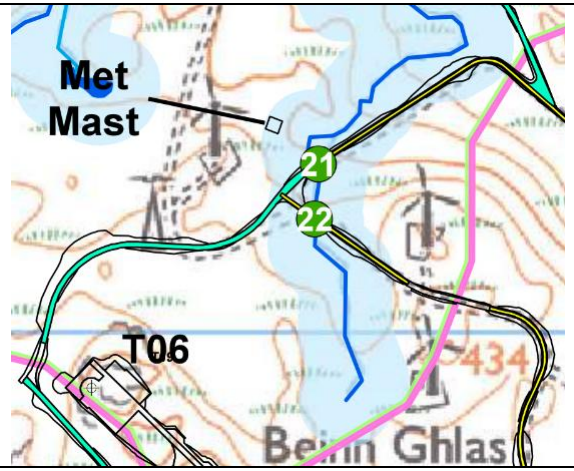
Watercourse	Infrastructure within buffer	Comments	Map Section
Unnamed tributary to the Allt Nathais	Two sections of the Site Access track of approximately 179 m and 15 m near the north eastern boundary of the Development Area north of WC15.	The Site Access track is approximately 6 m from the watercourse at its closest point with steep gradients down to the watercourse.	
 Northerly section  Southerly section			
Laggan Burn	Eastern side of the Construction Compound. Approximately 3,313 m^2 area.	Temporary Construction Compound 2 is approximately 35 m from the watercourse with very steep gradients down to the watercourse. The banks of the Laggan Burn below the compound are within a high risk SEPA surface water flood risk zone. Required to avoid deep peat and habitat.	

Watercourse	Infrastructure within buffer	Comments	Map Section
 Upslope towards compound  Downslope towards watercourse			
Minor ephemeral drain (not on OS map, purple dashed line)	Approximately 100 m of new Site Access track is roughly along a valley with diffuse flow which becomes a minor channel.	Infrastructure follows line on minor drain and M6 flush habitat to avoid deep peat and habitat of good quality to the east and steep gradients to the west. Shown to be an area of SEPA surface water flood risk zone.	

Watercourse	Infrastructure within buffer	Comments	Map Section
   Looking up the valley from confluence with the 1:50K scale watercourse downstream to the right on the photos Looking down the valley			
Laggan Burn and two unnamed tributaries of the Laggan Burn.	Substation 586m^2 within buffer.	The existing substation to be upgraded is within 50 m of the Laggan Burn and two of its unnamed tributaries. The area is also within a SEPA medium risk surface water flood zone. The substation is located on flat ground elevated between incised watercourse valleys.	

Watercourse	Infrastructure within buffer	Comments	Map Section
 Existing substation	 Laggan Burn approximately 30m north of substation		

Watercourse	Infrastructure within buffer	Comments	Map Section
Un-named tributary of Laggan Burn	Approximately 440 m of existing on site track between T01 and T0~~8~~5 and 780 m^2 area of new bellmouth junction.	New bellmouth junction is located within 50 m watercourse buffer.	

Watercourse	Infrastructure within buffer	Comments	Map Section
 Upslope towards bellmouth  Along existing track towards bellmouth			
Un-named tributary of River Lonan	Approximately 280 m of existing on site track south-west of the T~~10~~ 7 spur and 700 m^2 new bellmouth within buffer. The track north east of WC20 is approximately 9 m and the bellmouth by WC20 /WC21 is approximately 5 m to 16 m from the watercourse.	New bellmouth junction is located entirely within 50 m watercourse buffer.	

Watercourse	Infrastructure within buffer	Comments	Map Section
 Downslope towards watercourse  Down track, watercourse in left of photo			
Un-named tributary of Allt Nathais	Temporary Construction Compound 1 and approximately 150m of existing track.	Temporary Construction Compound 1 is located almost entirely within 50 m watercourse buffer.