

Appendix 13.2:
Watercourse Crossings,
Diversions and
Infrastructure within
50 m of a Water Feature

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Shepherds' Rig Wind Farm EIA Report
Appendix 13.2: Watercourse Crossings, Diversions and
Infrastructure within 50 m of a Water Feature

Table of Contents

1	Introduction	1
2	Legislative Context	1
3	Desk Study - Hydrological Context	3
4	Walkover Surveys	4
5	Ecological Provision	4
6	Watercourse Crossings	5
7	Infrastructure within 50m of Water Features	6

Annex

Annex I Table 1 Watercourse Crossing Inventory

Annex II Table 2 Infrastructure and Earthworks within 50m of a Water Feature

Annex III Table 3 Watercourse Diversion

1 Introduction

The infrastructure of the Proposed Varied Development will be comprised of a total of 10.3km of access tracks of which approximately 7.5 km will be new track, 2.6 km upgraded forestry track and 0.2 km will be new floated track. The track layout has been designed to avoid watercourses, minimise the number of watercourse crossings and use existing access tracks where possible. Track layout has been designed with a preference for the crossing of smaller scale watercourses, or replacing and improving 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 the detailed design phase these crossings will be sized to allow the 200 year plus climate change flows.

This appendix also provides an inventory of infrastructure within the 50m buffers of water features and a schematic of the proposed watercourse diversion.

This Appendix should be read in conjunction with **EIA Report Chapter 13: Hydrology and Hydrogeology, Figure 13.2a-b Hydrological Features** and **Chapter 4: Description of Proposed Varied Development**.

2 Legislative Context

The water environment includes wetlands, rivers, lochs, transitional waters (estuaries), coastal waters and groundwater.

As of 1 November 2025, Scotland's water regulation landscape has undergone a major transformation with the full repeal of the Water Environment (Controlled Activities) (Scotland) Regulations 2011, shifting all water-related activities, including abstraction, impoundment, engineering works, and discharges, under the Scottish Government's Environmental Authorisation (Scotland) Regulations 2018 (EASR) (that came into effect 1st November 2025). The transition from CAR to EASR, effective 1 November 2025, constitutes a legislative adjustment rather than a significant alteration to the EIA or regulatory process.

This change consolidates multiple environmental regimes: water, waste, industrial emissions, and radioactive substances, into a single, integrated authorisation system, marking a significant shift in regulatory oversight.

Key updates include a broadened regulatory scope that covers a wider range of activities, clarified definitions such as "regulated activity" and "best available techniques (BAT)," a flexible tiered authorisation structure, and the introduction of standardised technical schedules outlining requirements for monitoring, operational controls, and environmental standards.

While both CAR and EASR utilise General Binding Rules (GBRs), registrations, and permits, EASR introduces a combined permit system that streamlines compliance and reporting by integrating multiple activities under a single authorisation, reducing administrative burden and ensuring consistent standards across domains.

The amended regulations clarify procedures for permit variation, surrender, and transfer, and reinforce the use of technical schedules and SEPA's updated guidance. It is essential that all permitting and compliance strategies are updated are in compliance with the EASR framework, with an emphasis on maintaining Scotland's core water protections while supporting sustainable resource use and regulatory certainty within an integrated, modernised system.

Under the Environmental Authorisation (Scotland) Regulations (EASR) (2025) it is an offence to undertake the following activities to the water environment without a SEPA 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.

Three different types of authorisations under EASR allow for proportionate and risk-based regulation of watercourse crossings (engineering works in inland waters and wetlands). The authorisation process operates at three levels which are dependent on the size and scope of the crossing:

- General Binding Rules (GBRs) - Apply to the installation of temporary crossings with no part of the crossing on the bed or banks.
- Registration - Apply to crossings where no part is on the bed, but part of it rests on the banks (cumulative bank length ≤ 50 meters) (e.g. single span bridges, bottomless arch or portal frame culverts and pipe and cable crossings installed above or below the watercourse) and in accordance with SEPA's WAT-G-013 EASR Guidance: Registration Activity.
- Permits - Needed for permanent, larger structures (e.g., bridges with piers, large culverts causeways, and fords) with part of the crossing on the bed or banks. This requires a formal application including supporting risk assessments.

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 EASRs. However, these minor watercourse crossings shown 1:25,000 scale OS mapping have been considered within this Appendix.

It will be the objective of the Applicant to ensure that all activities remain in accordance with the EASR. 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).

Should activities be determined to be outwith the above GBR and Registration authorisations or have multiple registrations on one site, it would be appropriate to consider a permit application for multiple activities under a single authorisation. This application process shall be undertaken pre-construction, providing supplementary information to that available at the EIA Report stage.

A permit authorisation from SEPA will be required where 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), has greater than 5 km new track and is 'an onshore electricity generating station, wind farm or power station with a capacity of greater than 50 megawatts'.

The SEPA permit must be applied for and be granted before the activity can take place.

SEPA Position statements and Supporting Guidance (Published)

- WAT-PS-06-02: SEPA (2015), Culverting of Watercourses, Version 2;
- WAT-PS-07-02: SEPA (2012), Bank Protection, Version 2;
- WAT-SG- 78: SEPA (2012), Sediment Management Authorisation, Version 1;
- WAT-SG-23: SEPA (2008), Engineering in the Water Environment, Good Practice Guide – Bank Protection Rivers and Lochs, Version 1;
- WAT-SG-25: SEPA (2010), Engineering in the Water Environment, Good Practice Guide, River Crossings, Version 2;
- WAT-SG-26: SEPA (2010), Engineering in the Water Environment, Good Practice Guide, Sediment Management, Version 1;
- WAT-SG-75: SEPA (2021), Water Run-Off from Construction Sites September 2021; Version 2; and
- WAT-SG-31: SEPA, (2006) Special Requirements for Civil Engineering Contracts for the Prevention of Pollution, Version 2.
- WAT EASR-SC-054 SEPA (2025) Crossing with part of crossing only on the banks.
- WAT-G-013 SEPA (2025) EASR Guidance: Registration Activity: Crossing with part of crossing only on the bank.
- WAT-G-024 SEPA (2025), EASR Guidance: Engineering: Activity Guide: Crossings.
- WAT-G-027 SEPA (2025) EASR Guidance: Engineering: Maintenance, replacement and removal of existing engineered structures.

3 Desk Study - Hydrological Context

The entirety of the site lies within the Water of Ken catchment. The majority of the site drains east via Black Burn, Goat Strand, Dores Knowe, Craigillan Burn and other unnamed watercourses into the Water of Ken, which becomes the Kendoon Loch and then the Water of Ken again downstream.

The extreme north west of the Site drains west via the Marbrack Burn into the Water of Deugh at National Grid Reference (NGR) 259050 592270, which is a tributary of the Kendoon Loch and Water of Ken downstream.

The northern side of Marscalloch Hill, Black Burn drains the southern centre of the site and drains north east before a confluence with the Water of Ken (upstream of High Bridge of Ken) at NGR 263465 593650.

Goat Strand found on the southern slope of Craigengillan Hill, flows south before joining Craigengillan Burn. The catchment of the Craigengillan Burn covers the majority of the northern and western section of the site. It drains to the south east before joining the Water of Ken at NGR 263480 593740.

The Dry Burn drains from the east of Marscalloch Hill and joins the Water of Ken at NGR 263265 591175.

In the very north of the site, three unnamed tributaries drain into the Polifferie Burn and then the Water of Ken downstream.

The majority of the infrastructure is located within the catchments of Black Burn and Craigengillan Burn.

The desk study consisted of a review of the information regarding the Proposed Varied Development, principally involving an examination of the proposed track layout and the identification of watercourses marked on the Ordnance Survey (OS) 1:50,000 scale map which would require crossings, under the CAR Regulations. Crossings of minor watercourses were also identified at OS 1:25,000 scale mapping and those not shown on OS mapping.

This information collected informed the design to minimise crossing locations of all mapped watercourses.

4 Walkover Surveys

Subsequent to the initial desk studies, a walkover survey of the Site was conducted between 8th - 9th October 2024 and a further walkover was undertaken in March 2026 following layout changes, during which the identified crossings were visited to obtain specific information about each location. 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 Global Positioning System (GPS) unit was used to obtain locations with greater than 5 m accuracy.

5 Ecological Provision

For each crossing, there is provision to indicate the likelihood of the watercourse being used by mammals, principally otters, water vole, eel and fish. Where mammal or migratory fish presence is confirmed or suspected, appropriate design features will be included within 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).

6 Watercourse Crossings and Diversions

There is a total of seven watercourse crossings required for the Proposed Varied Development. Two of these crossings are existing forestry access track watercourse crossings and five are new proposed watercourses crossings.

One of the new watercourse crossings proposed (WC2 at NGR 262568 591223) is under the B729 public road to allow for the minor watercourse crossing (WC1 at NGR 262550 591183) at the entrance to the Site to be removed and diverted around the proposed bellmouth junction allowing for the continuation of the water drainage and avoiding the requirement for a long culvert beneath the bellmouth.

The Proposed Varied Development requires:

- Five new crossings of which three are shown on 1:50,000 scale OS Mapping, two watercourses are shown on 1:25,000 scale OS mapping.
- Two existing forestry track crossings are of 1:50,000 scale OS Map watercourses. These existing watercourses crossing will either be re-used, extended or replaced as determined later in the design process depending on specific engineering requirements and opportunities for habitat improvement.
- One existing forestry track over an OS Map 1:50,000 scale watercourse crossing is to be removed, diverted and replaced by a new crossing (WC2) beneath the B729 public road.

All watercourse crossings for the Proposed Varied Development are listed and described in **Table 1** and shown on **Figure 13.3a-b** of the EIA Report.

It is also noted that a man-made forestry drain not shown on OS mapping will require diverting around Turbine 3. This drain diversion was a design trade off to allow Turbine 3 to avoid the Marbrack Burn tributary and deeper peat.

The number of watercourse crossings have been minimised and existing crossings have been used, where possible. The Proposed Varied Development has reduced the number of watercourse crossings required and has removed the crossing of the Back Burn (the most sensitive watercourse on the Site for fish. Where required crossings will allow mammal and fish migration.

Watercourse crossings will be subject to appropriate SEPA CAR licencing and will be designed to allow the conveyance of a 0.5% AP (200 year) flow event plus an allowance for climate change and freeboard. Additionally, mitigation will put in place to control and attenuate runoff during all phases of the development and crossings will be regularly check and maintained during operation.

7 Infrastructure within 50m of Water Features

The SEPA scoping response requires an inventory of all infrastructure within 50 m of a watercourse. The recent EASRs suggest 30 m buffer all water features is to be avoided by design where possible. For some sensitive water features, such as migratory salmon containing waterbodies the buffer may be increased.

For the purposes of this assessment a 50 m buffer of 1:50,000 scale OS mapped water features confirm to be present during the site visits has been used as conservative approach, to be consistent with the Consented Development assessment and to meet the requirements of SEPA's scoping responses.

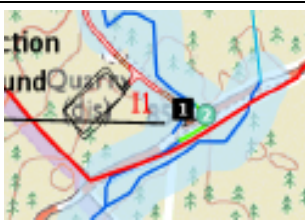
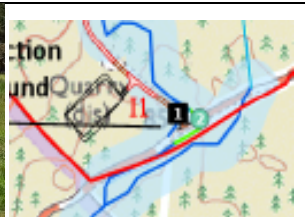
There is a total of four sections of the Proposed Varied Development within 50 m of a 1:50,000 scale OS Map water feature. These include:

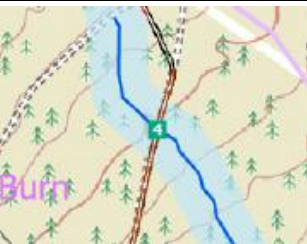
- Existing track (111 m length, I1) within 50 m (12 m at closest location) of 1:50,000 scale watercourse, un-named tributary of Water of Ken. Observed to be a small drain altered by existing track and forestry drainage.
- Existing track (385 m length, I2) within 50 m (10 m at closest location) of 1:50,000 scale watercourse, un-named tributary of Water of Ken. Observed to be a small drain altered by existing track and forestry drainage.
- Access track south of T9 (50 m, I3) within 50 m (44 m closest location) of the Dry Burn 1:50,000K scale watercourse. Observed to be a small watercourse.
- Earthworks of T5 (16 m, I4) within 50 m (48 m closest location) of the un-named tributary of Craigengillan Burn 1:50,000K scale watercourse. Observed to be a small drain altered by forestry drainage.
- Existing access track bellmouth requires widening for turbine delivery and maintenance. The existing forestry track minor watercourse crossing will be removed, diverted and replaced with a new watercourse crossing under the B729 public road in order to avoid the requirement for a long, culverted section of the watercourse under the widened bellmouth. The diversion and new short crossing of the minor watercourse was considered beneficial to allow a short, single span or bottomless arch crossing under the road which will allow more natural conditions and otter passage.

These are all incursions of the 50m watercourse buffer and there is sufficient distance to allow suitable drainage management.

Annex I

Table 1 Watercourse Crossing Inventory

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
WC1	262550	591183	Unnamed watercourse Shown on 1:50k OS mapping.	Existing Access Road	Existing Crossing to be removed.	Channel dimensions: approximately 0.7 m width x 0.1 m depth, slightly incised and meandering. Valley dimensions: steep drop to the channel, smaller drop further upstream, depth approximately 1.3 m. Grasses and rushes present, slow flow. Substrate: Gravel
   						
Downstream of culvert Upstream view of the culvert Channel upstream						
WC2	262568	591223	Unnamed watercourse Shown on 1:50k OS mapping.	Existing B729 Public Road	New Crossing for diversion and to replace WC1.	Diverted watercourse of an unnamed watercourse shown in 1:50,000 OS-mapping. Approximately 0.7 m width x 0.1 m depth, slightly incised and meandering
   						
The located of the diverted crossing Upstream area of the diversion Downstream of the diversion						
WC3	262393	591782	Dry Burn Tributary Shown on 1:50k OS mapping.	Existing track	Existing culvert crossing. 1.2 m metal culvert Washed out above culvert.	Channel dimensions: approximately 0.9 m wide x 0.2 m depth. Valley dimensions: 2 m wide, incised drop to the watercourse downstream, height 1.7 m. Substrate: cobbles, gravel, few boulders.
   						
Upstream of the crossing Culvert from upstream side Downstream of the culvert						

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
WC4	262523	592253	Dry Burn Shown on 1:50k OS mapping.	Existing track	Existing crossing. 0.4m metal culvert.	Channel dimensions: approximately 0.5 m width x 0.15 m depth. Moderate Flow. Valley dimensions: narrow channel with grasses and rushes present. Substrate: Cobbles, boulders Water flowing below the culvert – would benefit from being replaced.
   Upstream of the culvert Downstream of the culvert						
WC5	262207	594347	Craigengillan Burn tributary Shown on 1:25,000 OS mapping	New access track	New crossing	Channel dimensions: 0.7 m wide x 0.1-0.2 m depth, moderate flow. Valley dimensions: Flat to gently sloped, rushes, banks 0.2-0.4 m Substrate: Cobbles, peat/soil could be culvert, bottomless
    Width of the watercourse Tree located near the proposed watercourse crossing The watercourse at crossing location						
WC6	262119	594494	Craigengillan Burn tributary Shown on 1:25,000 OS mapping.	New access track	New crossing	Channel dimensions: 0.2 m wide x 0.5 m depth with banks of 0.7 m. There is good stream flow present. Valley dimensions: Actively eroding banks that are undercut at small bends. There is a gentle – moderate gradient, the stream is mostly linear. Substrate: Peaty substrate.
    Grassy banks of the channel View of the channel Upstream of the channel						

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
WC7	262233	594497	Craigengillan Burn Shown on 1:50,000 OS mapping	New access track	New crossing	Channel dimensions: 0.7 m width x 0.2 m depth, height 0.5 m Low flow, low gradient. Valley dimensions: Low gradient. Rushes at watercourse banks. Substrate: Cobbles, boulders
    Upstream of the crossing Crossing locations Downstream of the crossing						
WC8	262583	594874	Goat Strand Shown on 1:50,000 OS mapping	Access track to Turbine 4 and Turbine 2	New Crossing	Channel dimensions: 0.9 m width x 0.3 m depth. Gentle gradient, moderate flow with small meanders. Valley: Incised in areas, 0.5m drop from bank to the channel Substrate: Grit
    Crossing location Upstream of the crossing Downstream of the crossing						

Annex II

Table 2 Infrastructure and Earthworks within 50 m of a Water Feature

Infrastructure	Grid Reference		Water feature name	Distance to water feature	Area/length of encroachment	Description
	Easting	Northing				
I1. Existing track to be upgraded and associated earthworks	262525 to 262468	591257 to 591300	Unnamed watercourse shown on 1:50k OS mapping.	12 m at closest point	111 m	Drainage can be managed within the space to avoid sediment laden discharge to the watercourse.
						
I2. Existing track to be upgraded and associated earthworks	262442 to 262430	591322 to 591330	Unnamed watercourse shown on 1:50k OS mapping.	10 m at closest point	385 m	Drainage can be managed within the space to avoid sediment laden discharge to the watercourse.
						
I3. Access track south of Turbine 9.	262505 to 262460	592442 to 592489	Dry Burn, shown on 1:50k OS mapping.	44 m	50 m	Drainage can be managed within the space to avoid sediment laden discharge to the watercourse.
						

Infrastructure	Grid Reference		Water feature name	Distance to water feature	Area/length of encroachment	Description
	Easting	Northing				
I4. Earthworks of Turbine 5	261997 261980	594703 594738	Unnamed tributary to the Craigengillan Burn	48 m	16 m ²	Drainage can be managed within the space to avoid sediment laden discharge to the watercourse.
						

Annex III

Table 3 Watercourse Diversion

ID	Grid Reference		Watercourse Name	Infrastructure Location	Type of Crossing	Description
	Easting	Northing				
WC1 to WC2	262550	591183	Unnamed watercourse Shown on 1:50k OS mapping.	Existing Access Road	Existing Crossing to new crossing.	Channel dimensions: approximately 0.7 m width x 0.1 m depth, slightly incised and meandering. Valley dimensions: steep drop to the channel, smaller drop further upstream, depth approximately 1.3 m. Grasses and rushes present, slow flow. Substrate: Gravel
 Upstream						