

SKYE REINFORCEMENT PROJECT

Appendix V6-6.2: Alternative Alignment Schedule of Permanent Watercourse Crossings

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1.0 Introduction

This Appendix contains information relating to permanent watercourse crossings associated with the Alternative Alignment within Section 3 of the project between Broadford and Kyle Rhea. The Alternative Alignment is referred to interchangeably with ‘the Proposed Development’.

Proposed permanent crossings are associated with new tracks and existing tracks which are scheduled to be upgraded. No Horizontal Directional Drill locations beneath watercourse are proposed.

A survey of watercourse crossings for the Proposed Development was undertaken between 14 – 25 March and 18 – 21 June 2022. Permanent watercourse crossing locations are shown on **Figure V6-6.1**.

1.1 Relevant Legislation

The Water Framework Directive (2000/60/EC) (WFD) has been transposed into Scottish legislation as the Water Environment and Water Services (Scotland) Act 2003¹ (or WEWS) and has given Scottish ministers powers to introduce regulatory controls over activities in order to protect and improve Scotland’s water environment. The water environment includes wetlands, rivers, lochs, transitional waters (estuaries), coastal waters and groundwater. These regulatory controls, known as the Water Environment (Controlled Activities) (Scotland) Regulations 2011² (CAR) came into force in 2011 and have since been amended in 2013, 2017, and 2021.

With respect to watercourse crossings required for the Proposed Development, CAR requires that all engineering works in inland surface waters and wetlands are subject to authorisation and allow for proportionate risk-based regulation which is outlined in the CAR Practical Guide³. The authorisation process operates at three levels:

- General Binding Rules (GBR):
 - Minor bridges with no construction on bed or banks.
- Registration:
 - Bridges across rivers and lochs where no part of the structure encroaches on the bed (e.g. no piers or in-channel supports). In addition, the total length of the structures on both banks should not be more than 20 m. This category includes bottomless arch culverts; and
 - Closed culverts used for single-track roads, footpaths and/or cycle routes, where the affected river is not more than 2 m wide.
- Licence (Simple/Complex):
 - All other bridges, fords or causeways; and
 - This category would include bridges affecting more than 20 m total bank lengths, bridges with in-stream supports or closed culverts for crossings not specified above.

These levels cover activities with increasing levels of potential impact on the hydrological environment. SEPA will only be required to provide authorisation for watercourse crossings shown on the 1:50,000 scale Ordnance Survey (OS) maps (Landranger Series). All other watercourses are classed as a “minor watercourse” and are exempt under CAR.


¹ Water Environment and Water Services (Scotland) Act 2003, available at <https://www.legislation.gov.uk/asp/2003/3/contents> [Accessed November 2021]

² Water Environment (Controlled Activities) (Scotland) Regulations 2011, available at <https://www.legislation.gov.uk/ssi/2011/209/contents/made> [Accessed November 2021]


³ SEPA (July 2021) The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended), A Practical Guide, available at https://www.sepa.org.uk/media/34761/car_a_practical_guide.pdf [Accessed November 2021]


If, as part of the detailed design, it is required to replace an existing watercourse crossing, the design of the new crossing would be agreed with SEPA prior to any construction works commencing in accordance with CAR.


2.0 New Crossings on Proposed Permanent Tracks


Watercourse Crossing ID	WX1
Watercourse Crossing Details	<p>Watercourse Crossing: WX1 NGR: NG 62868 24055 Watercourse Width: 0.3m Watercourse Depth: 0.3m Notes: Channel incised into peat.</p>
Photograph Looking Upstream	
Photograph Looking Downstream	


Watercourse Crossing ID	WX2
Watercourse Crossing Details	<p>Watercourse Crossing: WX2 NGR: NG 63523 23076 Watercourse Width: 2.5m Watercourse Depth: 1m Notes: Channel relatively uniform and incised into peat.</p>
Photograph Looking Upstream	
Photograph Looking Downstream	


Watercourse Crossing ID	WX3
Watercourse Crossing Details	<p>Watercourse Crossing: WX3 NGR: NG 74238 21002 Watercourse Width: Not recorded Watercourse Depth: Not recorded Notes: Unable to access during survey (as ground conditions were heavily vegetated and safe passage on foot was not possible). Photo of general area of the crossing is shown.</p>
Photograph of General Area	


Watercourse Crossing ID	WX4
Watercourse Crossing Details	<p>Watercourse Crossing: WX4 NGR: NG 74472 20915 Watercourse Width: ~0.5 m Watercourse Depth: ~0.3 m Notes: Unable to access (as ground conditions were heavily vegetated and safe passage on foot was not possible), approximate measurements taken from approximately 100 m downstream of watercourse, where it meets Allt Mor watercourse.</p>
Photograph of Watercourse Downstream of the crossing location	


Watercourse Crossing ID	WX5
Watercourse Crossing Details	<p>Watercourse Crossing: WX5 NGR: NG 75434 20417 Watercourse Width: Not recorded Watercourse Depth: Not recorded Notes: Unable to access during survey (as ground conditions were heavily vegetated and safe passage on foot was not possible). Photograph of general area of the crossing is shown below.</p>
Photograph of General Area	


Watercourse Crossing ID	WX6
Watercourse Crossing Details	<p>Watercourse Crossing: WX6 NGR: NG 75479 20339 Watercourse Width: Not recorded Watercourse Depth: Not recorded Notes: Unable to access during survey (as ground conditions were heavily vegetated and safe passage on foot was not possible). Photograph of general area of the crossing is shown below.</p>
Photograph of General Area	


Watercourse Crossing ID	WX7
Watercourse Crossing Details	<p>Watercourse Crossing: WX7 NGR: NG 75525 20345 Watercourse Width: Not recorded Watercourse Depth: Not recorded Notes: Unable to access during survey (as ground conditions were heavily vegetated and safe passage on foot was not possible). Photograph of general area of the crossing is shown below.</p>
Photograph of General Area	


Watercourse Crossing ID	WX8
Watercourse Crossing Details	<p>Watercourse Crossing: WX8 NGR: NG 75521 20425 Watercourse Width: Not recorded Watercourse Depth: Not recorded Notes: Unable to access during survey (as ground conditions were heavily vegetated and safe passage on foot was not possible). Photograph of general area of the crossing is shown below.</p>
Photograph of General Area	


Watercourse Crossing ID	WX9
Watercourse Crossing Details	<p>Watercourse Crossing: WX9 NGR: NG 75795 20548 Watercourse Width: Not recorded Watercourse Depth: Not recorded Notes: Unable to access during survey (as ground conditions were heavily vegetated and safe passage on foot was not possible). Photograph of general area of the crossing is shown below.</p>
Photograph of General Area	 A photograph showing a landscape with a road on the right, a fence in the foreground, and hills in the background. The road is paved and curves to the right. The foreground shows a wooden fence post and some vegetation. The background consists of rolling hills under a cloudy sky.


Watercourse Crossing ID	WX10
Watercourse Crossing Details	<p>Watercourse Crossing: WX10 NGR: NG 75827 20506 Watercourse Width: Not recorded Watercourse Depth: Not recorded Notes: Unable to access during survey(as ground conditions were heavily vegetated and safe passage on foot was not possible). Photograph of general area of the crossing is shown below.</p>
Photograph of General Area	


Watercourse Crossing ID	WX11
Watercourse Crossing Details	<p>Watercourse Crossing: WX11 NGR: NG 75867 20470 Watercourse Width: Not recorded Watercourse Depth: Not recorded Notes: Unable to access during survey(as ground conditions were heavily vegetated and safe passage on foot was not possible). Photograph of general area of the crossing is shown below.</p>
Photograph of General Area	

Watercourse Crossing ID	WX12
Watercourse Crossing Details	<p>Watercourse Crossing: WX12 NGR: NG 76655 20577 Watercourse Width: Not recorded Watercourse Depth: Not recorded Notes: Unable to access during survey (as ground conditions were heavily vegetated and safe passage on foot was not possible). Photograph of general area of the crossing is shown below.</p>
Photograph of General Area	



Watercourse Crossing ID	WX13
Watercourse Crossing Details	<p>Watercourse Crossing: WX13 NGR: NG 77295 20317 Watercourse Width: Not recorded Watercourse Depth: Not recorded Notes: Unable to access during survey (as ground conditions were heavily vegetated and safe passage on foot was not possible). Photograph of general area of the crossing is shown below.</p>
Photograph of General Area	



Watercourse Crossing ID	WX14
Watercourse Crossing Details	<p>Watercourse Crossing: WX14 NGR: NG 77763 20421 Watercourse Width: Not recorded Watercourse Depth: Not recorded Notes: Unable to access during survey (as ground conditions were heavily vegetated and safe passage on foot was not possible). Photograph of general area of the crossing is shown below.</p>
Photograph of General Area	



Watercourse Crossing ID	WX15
Watercourse Crossing Details	<p>Watercourse Crossing: WX15 NGR: NG 77819 20474 Watercourse Width: Not recorded Watercourse Depth: Not recorded Notes: Unable to access during survey (as ground conditions were heavily vegetated and safe passage on foot was not possible). Photograph of general area of the crossing is shown below.</p>
Photograph of General Area	



Watercourse Crossing ID	WX16
Watercourse Crossing Details	<p>Watercourse Crossing: WX16 NGR: NG 78581 20927 Watercourse Width: 0.5 m Watercourse Depth: 0.5 m Notes: Watercourse culverted under existing track by a concrete circular culvert which is 0.45 m in diameter. Culvert was clear and no obstruction was noted.</p>
Photograph Looking at Culvert Entrance from Upstream	
Photograph Looking at Culvert Exit from Downstream	



3.0 Existing Crossings on Existing Tracks to be Upgraded



Watercourse Crossing ID	WX17
Watercourse Crossing Details	<p>Watercourse Crossing: WX17 NGR: NG 78677 21465 Status: Existing Culvert Diameter: 0.8m Culvert Construction Type: circular corrugated metal culvert Watercourse Width: 0.4m Watercourse Depth: 0.3-1m Notes: Channel deeper downstream of the culvert which is partially misshapen at the outfall.</p>
Photograph Looking at Culvert Entrance from Upstream	
Photograph Looking at Culvert Exit from Downstream	

Watercourse Crossing ID	WX18
Watercourse Crossing Details	<p>Watercourse Crossing: WX18 NGR: NG 78665 21765 Status: Existing Culvert Diameter: 0.8m Culvert Construction Type: circular corrugated metal culvert Watercourse Width: 0.3-1.5m Watercourse Depth: 0.1-0.3m Notes: Channel significantly narrower upstream (0.3m) and much wider downstream (1.5m), dry on the date of the survey (March 2022).</p>
Photograph Looking at Culvert Entrance from Upstream	
Photograph Looking at Culvert Exit from Downstream.	



Watercourse Crossing ID	WX19
Watercourse Crossing Details	<p>Watercourse Crossing: WX19 NGR: NG 78681 21851 Status: Existing Culvert Diameter: 0.3m Culvert Construction Type: circular corrugated metal Watercourse Width: 0.2-0.4m Watercourse Depth: 0.1m Notes: Active channel is within a larger channel which is 1.5m deep. Downstream outfall culvert has slightly corroded with moss present along the base.</p>
Photograph Looking at Culvert Entrance from Upstream	
Photograph Looking at Culvert Exit from Downstream.	



Watercourse Crossing ID		WX20
Watercourse Details	Crossing	<p>Watercourse Crossing: WX20 NGR: NG 78696 21970 Status: Existing Culvert Diameter: 0.3m Culvert Construction Type: circular corrugated metal culvert Watercourse Width: 0.1m Watercourse Depth: 0.1m Notes: Active channel is within larger channel which is up to 1m wide and 1.5m deep. Dry channel during survey (March 2022) with upstream of the culvert heavily reeded/vegetated. Downstream end of culvert is corroded at the base.</p>
Photograph Looking at Culvert Entrance from Upstream		
Photograph Looking at Culvert Exit from Downstream		



Watercourse Crossing ID	WX21
Watercourse Crossing Details	<p>Watercourse Crossing: WX21 NGR: NG 78690 22071 Status: Existing Culvert Diameter: 0.4m Culvert Construction Type: circular corrugated metal culvert Watercourse Width: 0.2m Watercourse Depth: 0.1m Notes: Active channel is within a wider channel which is 0.7m wide and 0.5m high.</p>
Photograph Looking at Culvert Entrance from Upstream	
Photograph Looking at Culvert Exit from Downstream.	



Watercourse Crossing ID	WX22
Watercourse Crossing Details	<p>Watercourse Crossing: WX22 NGR: NG 78657 22171 Status: Existing Culvert Diameter: 1m Culvert Construction Type: circular corrugated metal culvert Watercourse Width: 1-3m Watercourse Depth: 0.3m Notes: Upstream channel is around 1m wide but downstream the cross section is less uniform extending to 1 - 3m width. Active watercourse in a larger 2m deep channel.</p>
Photograph Looking at Culvert Entrance from Upstream	
Photograph Looking at Culvert Exit from Downstream	



Watercourse Crossing ID	WX23
Watercourse Crossing Details	<p>Watercourse Crossing: WX23 NGR: NG 78649 22218 Status: Existing Culvert Diameter: 0.4m Culvert Construction Type: circular corrugated metal culvert Watercourse Width: 0.4m Watercourse Depth: 0.2m Notes: None.</p>
Photograph Looking at Culvert Entrance from Upstream	
Photograph Looking at Culvert Exit from Downstream	



Watercourse Crossing ID	WX24
Watercourse Crossing Details	<p>Watercourse Crossing: WX24 NGR: NG 78665 22360 Status: Existing Bridge Width: 20m Culvert Construction Type: open span bridge with steel frame and wooden slats Watercourse Width: 5m Watercourse Depth: 10-15m Notes: Fast flowing channel incised into bedrock.</p>
Photograph Looking at Bridge from Upstream	 A close-up photograph of the bridge's steel truss structure. The bridge is built with heavy steel beams and girders, supported by concrete piers. The watercourse is visible below the bridge, showing a rocky bed and some vegetation.
Photograph Looking Downstream from Bridge	 A photograph showing the watercourse downstream from the bridge. The channel is narrow and rocky, with water flowing over the stones. The surrounding area is covered in dense vegetation, including trees and shrubs.

Watercourse Crossing ID	WX25
Watercourse Crossing Details	<p>Watercourse Crossing: WX25 NGR: NG 78778 22514 Status: Existing Culvert Diameter: 0.6m Culvert Construction Type: circular corrugated metal culvert Watercourse Width: 0.5-1.5m Watercourse Depth: 0.4m Notes: Channel becomes more incised into bedrock downstream to form a channel depth of 3m.</p>
Photograph Looking at Culvert Entrance from Upstream	
Photograph Looking at Culvert Exit from Downstream	

Watercourse Crossing ID	WX26
Watercourse Crossing Details	<p>Watercourse Crossing: WX26 NGR: NG 78860 22636 Status: Existing Culvert Diameter: 1m Culvert Construction Type: circular corrugated metal Watercourse Width: 2-3m Watercourse Depth: 0.3m Notes: Upstream catchment is steep with waterfall.</p>
Photograph Looking at Culvert Entrance from Upstream	
Photograph Looking at Culvert Exit from Downstream	

Watercourse Crossing ID	WX27
Watercourse Crossing Details	<p>Watercourse Crossing: WX27 NGR: NG 78874 22689 Status: Existing Culvert Diameter: 1m Culvert Construction Type: circular corrugated metal culvert Watercourse Width: 0.3m Watercourse Depth: 0.1m Notes: Two small channels join upstream of the culvert.</p>
Photograph Looking Upstream from Upstream	 A photograph showing a watercourse flowing through a wooded area. The water is visible in a narrow channel, surrounded by mossy rocks and dense vegetation. The trees are mostly bare, suggesting a late autumn or winter setting.
Photograph Looking at Culvert Exit from Downstream.	 A photograph showing the exit of a culvert. A large, dark, circular pipe opening is visible, surrounded by mossy rocks and dense vegetation. The pipe is set into a stone wall.

Watercourse Crossing ID	WX28
Watercourse Crossing Details	<p>Watercourse Crossing: WX28 NGR: NG 79031 22919 Status: Existing Culvert Diameter: 0.4m Culvert Construction Type: circular corrugated metal culvert Watercourse Width: 0.1m Watercourse Depth: 0.2m Notes: Two small 0.1m x 0.2m channels join at the crossing, incised into peat/soil.</p>
Photograph Looking at Culvert Entrance from Upstream	
Photograph Looking at Culvert Exit from Downstream	

Watercourse Crossing ID	WX29
Watercourse Crossing Details	<p>Watercourse Crossing: WX29 NGR: NG 79156 23144 Status: Existing Culvert Diameter: 0.4m Culvert Construction Type: circular plastic culvert Watercourse Width: 0.2m Watercourse Depth: 0.2m Notes: Channel is incised into peat, culvert is slightly deformed downstream.</p>
Photograph Looking at Culvert Entrance from Upstream	
Photograph Looking at Culvert Exit from Downstream	

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