TA10.6: Watercourse Crossing Assessment

STRATHY SOUTH WIND FARM

Technical Appendix 10.6: Watercourse Crossing Assessment

Prepared for: SSE Generation Ltd

SLR Ref: 428.00660.00070
Version 2
August 2020

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1.0 Introduction

1.1 General

SLR Consulting Ltd (SLR) was commissioned by SSE Generation Ltd (SSE) to carry out an assessment of the watercourse crossings required for the proposed track construction at the proposed Strathy South wind farm (the Proposed Varied Development).

The Proposed Varied Development is located within the Strathy South conifer plantation, approximately 12 km south of Strathy village and south of SSE's operational Strathy North Wind Farm. It is centred at National Grid Reference (NGR) NC 79608 51788.

Specifically, this report presents details of each of the proposed watercourse crossing points and with reference to guidance published by the Scottish Environment Protection Agency (SEPA); the report also details the likely form of the track crossing solution (e.g. culvert, arch culvert or bridge). The final design of each crossing solution would be agreed with SEPA prior to construction and be determined as part of the detailed site design.

1.2 Legislation

The Water Framework Directive (2000/60/EC) (WFD) represents a significant piece of environmental legislation which has implications for the Proposed Varied Development. The WFD has been transposed into Scottish legislation as the Water Environment and Water Services (Scotland) Act 2003[1] (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 2011[2] (CAR) came into force in 2011 and have since been amended in 2013 and 2017.

With respect to watercourse crossings required for the Proposed Varied 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 Guide[3]. The authorisation process operates at three levels:

- General Binding Rules (GBR);
- Registration; and
- License (Simple/Complex).

These levels cover activities with increasing levels of potential impact upon 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. Likely authorisation levels for the proposed crossings are provided in this report.

The information presented in this document is only intended to act as a guide. The actual design, construction and/or improvements to the crossings would be agreed with SEPA prior to any construction works commencing.

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[1] Water Environment and Water Services (Scotland) Act 2003, available at http://www.legislation.gov.uk/asp/2003/3/contents [date accessed 08/04/2020]

[2] Water Environment (Controlled Activities) (Scotland) Regulations 2011, available at http://www.legislation.gov.uk/ssi/2011/209/contents/made/ [date accessed 08/04/2020]

[3] SEPA (October 2019) 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 [date accessed 08/04/2020]

2.0 Methodology

2.1 General

The following section describes the methodology undertaken to carry out the watercourse crossing assessment. SLR has undertaken a watercourse crossing survey based on the proposed track layout for the Proposed Varied Development which is illustrated in Figure 10.6.1.

1:50,000 OS mapping and aerial photographs for the area, as well as the 2007 Environmental Statement (ES) and 2013 ES Addendum, were studied to identify the likely watercourse crossings required to be established for the proposed road layout for the Proposed Varied Development; sixteen watercourse crossings were identified and comprise both large river crossings and small surface watercourse crossings and of these 5 are existing crossings and 11 would be new watercourse crossings. It should be noted that WX01 and WX03 represent crossings on the preferred and alternative access routes to the main site, respectively. As only one of these access routes would be constructed the maximum number of watercourse crossings for the Proposed Varied Development would be 15. However, all 16 watercourse crossings are presented in this report.

All watercourse crossings would be permanent and used to access the main site for construction and maintenance purposes during the life of the Proposed Varied Development.

2.2 Site Visit

Following identification of the potential watercourse crossings, a site visit and inspection of each of the identified crossings was undertaken to obtain information specific to each watercourse. Photographs and detailed field notes were taken, reporting the dimensions of the watercourse channel and the existing crossing type (if applicable).

The inspection recorded upgradient and downgradient conditions (photographs), channel width and depth. An assessment was undertaken on possible crossing solutions and drawings were prepared detailing the water crossing survey at each point.

The original site surveys were carried out in May 2012 and May 2013 for the 2013 ES Addendum, which identified a total of 18 watercourse crossings. Details of these watercourse crossings were outlined in Volume 4: Technical Appendix A14.2 of the 2013 ES Addendum and have been used to inform the assessment for the Proposed Varied Development. Details of the proposed additional water crossing WX19 were obtained in May 2020.

2.3 Summary of Watercourse Crossing Assessment

The locations of the watercourse crossings are provided in Figure 10.6.1 with details and photographs of each watercourse crossing presented in Figure 10.6.2 to Figure 10.6.17 . This assessment provides an accurate indication of the likely number, scale and types of permanent watercourse crossings required as part of the Proposed Varied Development. It is anticipated that this data can be used as a supporting document during the CAR application process, if required.

3.0 Watercourse Crossing Details

Table 3-1 provides a summary of the surveyed watercourses. More detailed information on the watercourse crossings is provided in Figure 10.6.2 to Figure 10.6.17, which includes the following:

- watercourse crossing identification number;
- grid reference;
- hydromorphological information at watercourse crossing;
- likely type of crossing required and crossing characteristics; and
- the likely level of CAR authorisation required.

Table 3-1
Summary of Watercourse Crossings

Watercourse Crossing ID (refer to Figure 10.6.1 for locations)	National Grid Reference (NGR)	Existing Crossing Type	Proposed Crossing Type	Likely Required CAR Authorisation
WX01	NC 81146 55508	None	Permanent bridging	Registration or simple licence depending on design of the bridge
WX02	NC 81304 53931	None	Arch culvert	Registration
WX03	NC 81878 55835	None	Permanent bridging	Registration or simple licence depending on design of the bridge
WX04	NC 80739 52708	Closed culvert	Upgrade existing culvert*	Registration
WX05	NC 80178 52030	Bridge	Upgrade existing bridge*	Registration
WX07	NC 80807 51395	Closed culvert	Upgrade existing culvert*	Registration
WX08	NC 79176 49171	None	Arch culvert	Registration
WX09	NC 80171 50019	Closed culvert	Upgrade existing culvert*	Registration
WX10	NC 79722 49723	None	Arch culvert	Registration
WX11	NC 79101 49512	None	Arch culvert	Registration
WX12	NC 78929 50103	None	Arch culvert	Registration

Watercourse Crossing ID (refer to Figure 10.6.1 for locations)	National Grid Reference (NGR)	Existing Crossing Type	Proposed Crossing Type	Likely Required CAR Authorisation
WX13	NC 78505 49620	None	Arch culvert	Registration
WX14	NC 77693 49210	None	Arch culvert	Registration
WX15	NC 78763 50282	None	Arch culvert	Registration
WX16	NC 79354 52339	Closed culvert	Upgrade existing culvert*	Registration
WX19	NC 81000 51647	None	Arch culvert	Registration

*Subject to inspection

The assessment shows that the required authorisations would likely include General Binding Rules, Registrations and Simple Licenses. This is based on the following activities provided in pages 45 and 46 of SEPA's CAR practical guide[3]:

- General Binding Rules (GBRs)
    - Minor bridges with no construction on bed or banks.
- Registration Activities:
    - 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.
- Simple License Activities
    - 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.

In summary, review of Table 3-1 and Figures 10.6.1 – 10.6.17 shows that the Proposed Varied Development would require the following watercourse crossings:

- A new permanent bridge over the River Strathy at one of two alternative locations (referred to as WX01 and WX03);
- Nine new arch culverts (WX02, WX08, WX10 - 15 and WX19);
- Upgrading of one existing bridge (WX05); and
- Upgrading of four existing closed culverts (WX04, WX07, WX09, WX16).

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4.0 Watercourse Crossing Design Principals

The purpose of this document is to provide details of the proposed watercourse crossing locations rather than to comment on the detailed engineering design, which would be undertaken as part of the detailed site design.

As part of the detailed site design, which would be completed prior to any construction commencing, the construction details for each proposed watercourse crossing would be agreed with SEPA, Scottish Natural Heritage and Northern District Salmon Fishery Board and with reference to SEPA guidance and potential fisheries, interests and protected species.

Natural streams are usually the most important ecologically as they are more likely to support the most valuable assemblages of flora and fauna and can have high individual nature conservation and fishery value. Channel bed and bank material can range from peat to soils, clays, gravels, cobbles and boulders and any combination of these is frequently encountered. An arch culvert structure would be the most suitable form of crossing for these watercourses. Any crossing over the River Strathy would require a bridging solution due to the increased size of the watercourse.

Several crossings already exist on the site and generally consist of closed culverts, there is potential for these to be upgraded in order to make them suitable as part of the permanent works, subject to an inspection and detailed design.

As detailed in the Flood Risk Assessment and Drainage Impact Assessment (EIAR Volume 4: Technical Appendix 10.5) all watercourse crossings would be designed to convey at least the 200-year storm plus an increase for the effects of climate change.

All watercourse crossings would also be designed to allow the free passage of mammals.

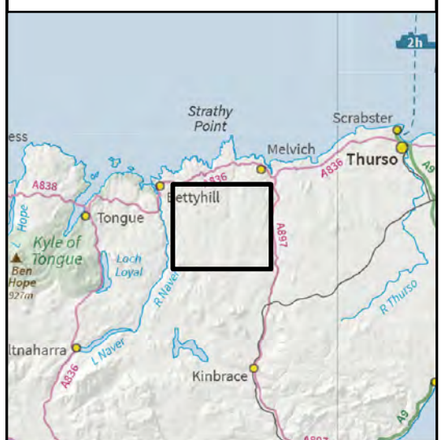
Inevitably, there would be some disturbance in the vicinity of the watercourse crossings during the construction period. The CEMP (EIAR Volume 4: Technical Appendix 2.1) presents how these risks would be minimised and mitigated, during the construction period.

sse Renewables

- Site Boundary
- Turbines
- LiDAR A
- LiDAR B
- Preferred Access Route
- Alternative Access Route
- Common Access Route
- Existing Yellow Bog Track, Surfacing to be Upgraded and Minor Localised Widening
- Strathy North Access Route
- LiDAR Track

Access Track

- Cut
- Floating
- Upgrade
- Borrow Pit
- Laydown Area
- Temporary Laydown Area
- Construction Compound
- Substation
- Batching Plant
- Hardstanding
- Watercourse (OS Vectomap Local)
- Water Crossing Remaining from 2013
- Water Crossing New to 2019



Scale 1:50,000 @ A3

0 1 2 Km

N

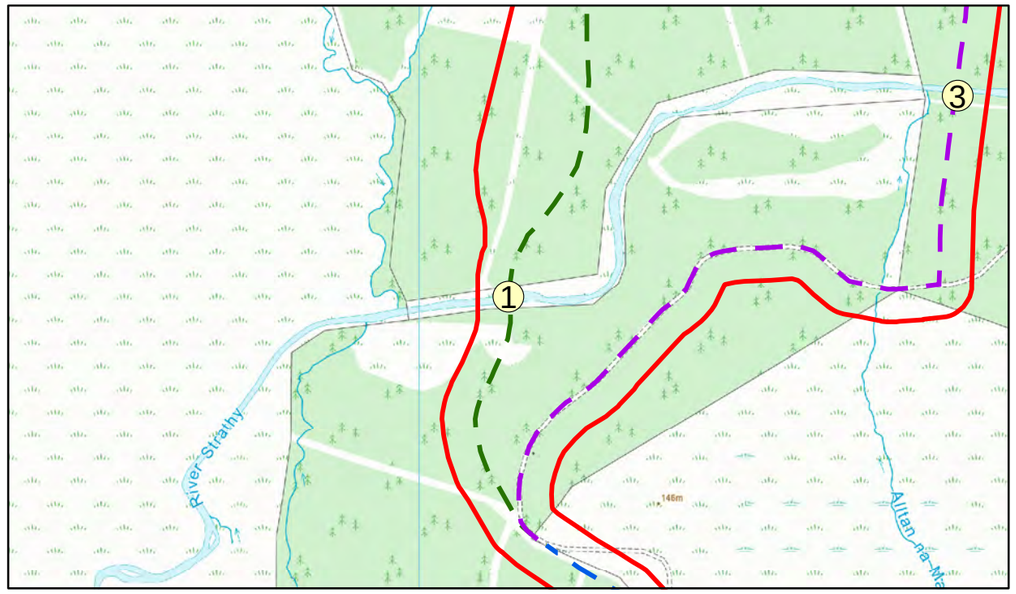
Figure 10.6.1
Site Infrastructure and Watercourse Crossing Locations

Strathy South Wind Farm
EIAR 2020

[1] Estimated from Online SEPA Flood Mapping. Contains public sector information licensed under the Open Government Licence v3.0

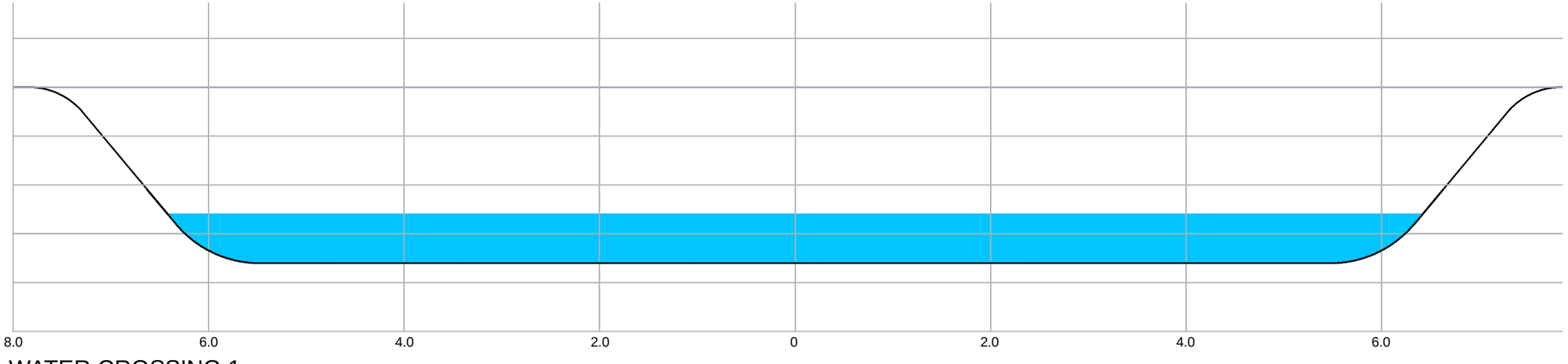
WATERCOURSE CROSSING 1 - VIEW UPSTREAM

WATERCOURSE CROSSING 1 - VIEW DOWNSTREAM



Water Crossing 1
(281146 955508)

Watercourse Width:	12.00m	*Channel Width:*	15.00m
Watercourse Depth:	0.50m	*Channel Depth:*	1.80m
Context:	River Strathy		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type *Permanent Bridge*		Potential CAR Authorisation *Registration or Simple Licence required (dependant on type of bridge)*	



WATER CROSSING 1

sse Renewables

Key

- Site Boundary
- Watercourse Crossing
- Preferred Access Route
- Alternative Access Route
- Common Access Route

Scale 1:10,000 @ A3

0 100 200 300 400 500 Meters

N

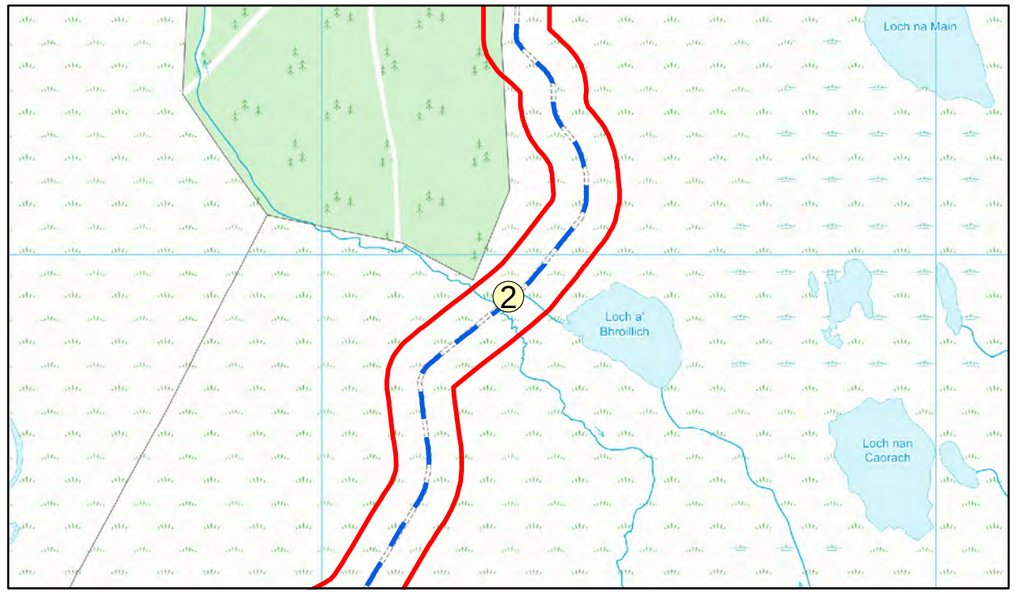
Figure 10.6.2

Water Crossing 1

Strathy South Wind Farm
EIAR 2020

WATERCOURSE CROSSING 2
- VIEW UPSTREAM

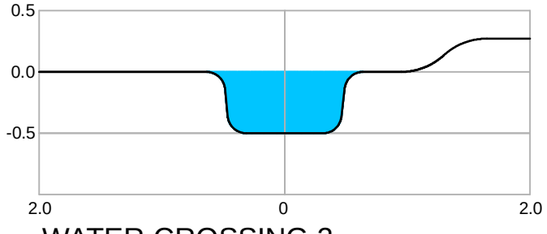
WATERCOURSE CROSSING 2
- VIEW DOWNSTREAM



Water Crossing 2
(281304 953931)

Watercourse Width:	0.90m	*Channel Width:*	0.90m
Watercourse Depth:	0.50m	*Channel Depth:*	0.50m
Context:	Surface Watercourse		
Bed Material:	Not Proven		
Gradient:	Gentle		

Proposed Crossing Type Arch Culvert	Potential CAR Authorisation *Registration*



WATER CROSSING 2

1:50

Key

- Site Boundary
- Watercourse Crossing
- Common Access Route

Scale 1:10,000 @ A3

0 100 200 300 400 500 Meters

N

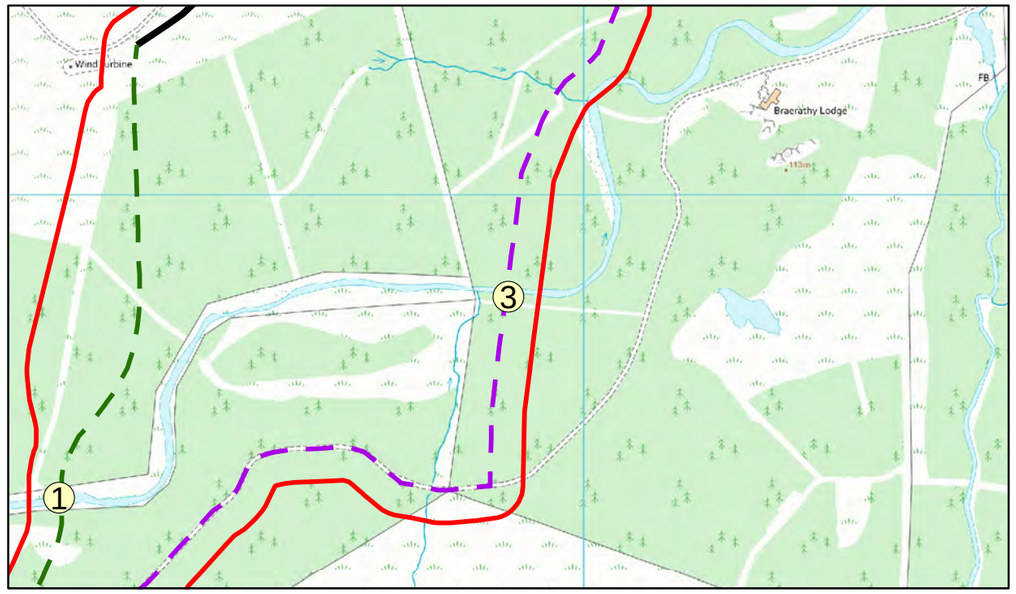
Figure 10.6.3

Water Crossing 2

Strathy South Wind Farm
EIAR 2020

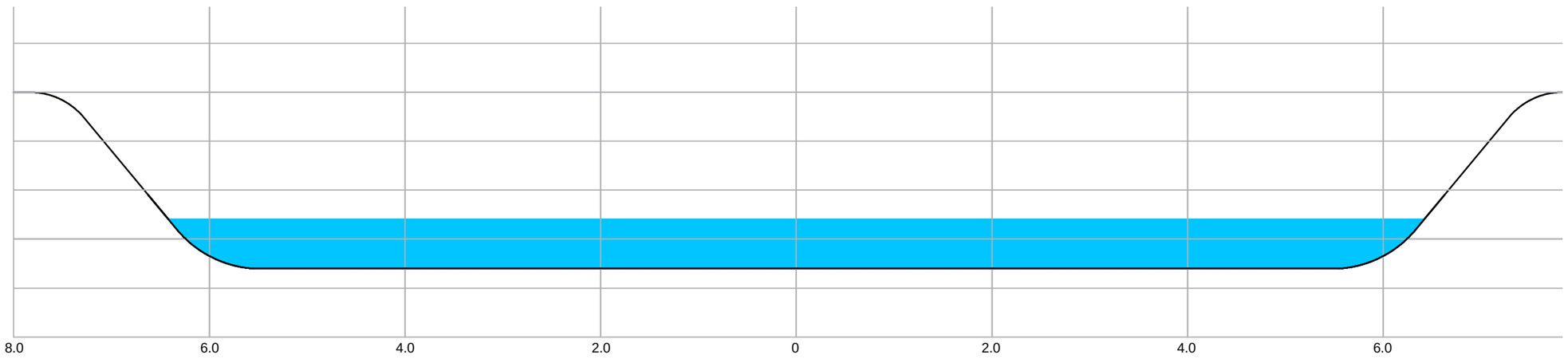
WATERCOURSE CROSSING 3 - VIEW UPSTREAM

WATERCOURSE CROSSING 3 - VIEW DOWNSTREAM



Water Crossing 3
(281878 955835)

Watercourse Width:	12.00m	*Channel Width:*	15.0m
Watercourse Depth:	0.5m	*Channel Depth:*	1.80m
Context:	River Strathy		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type *Permanent Bridge*		Potential CAR Authorisation *Registration or Simple Licence required (dependant on type of bridge*)	



WATER CROSSING 3

sse Renewables

Key

- Site Boundary
- Watercourse Crossing
- Preferred Access Route
- Alternative Access Route
- Strathy North Access Route

Scale 1:10,000 @ A3

0 100 200 300 400 500 Meters

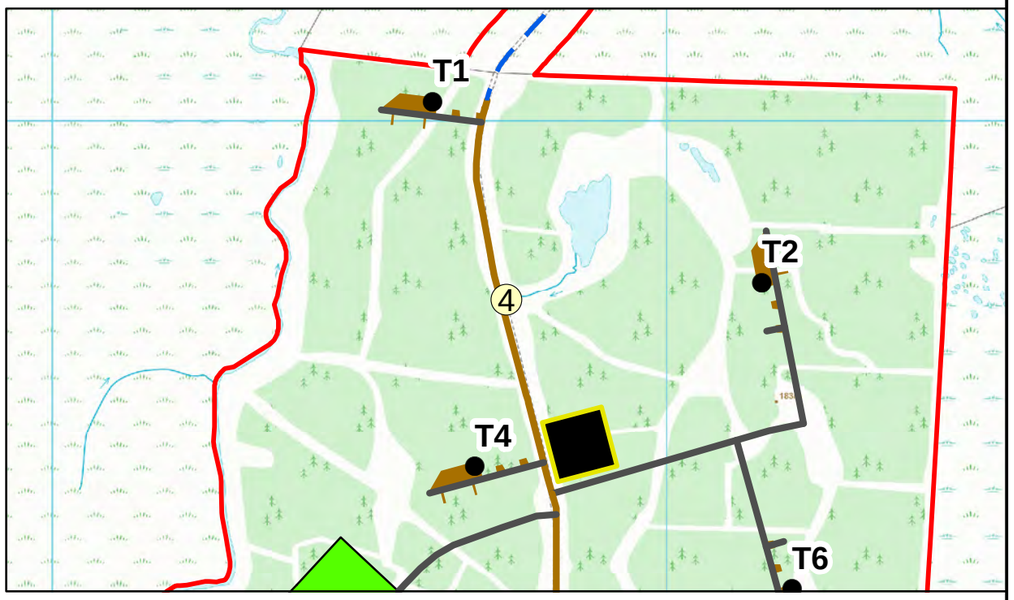
N

Figure 10.6.4

Water Crossing 3

Strathy South Wind Farm
EIAR 2020

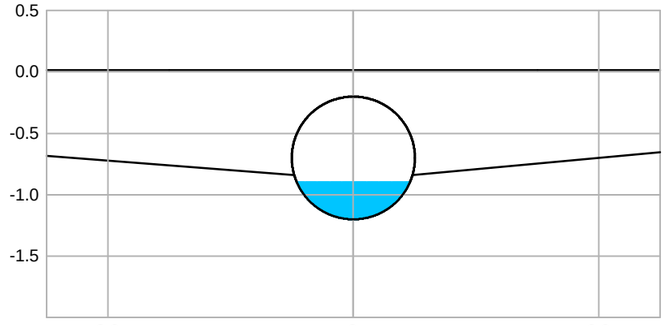
WATERCOURSE CROSSING 4
- VIEW UPSTREAM



Water Crossing 4
(280739 952708)

Watercourse Width:	0.50m	*Channel Width:*	2.00m
Watercourse Depth:	0.30m	*Channel Depth:*	1.20m
Context:	Surface Watercourse		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type *Existing Culvert – Upgrade Existing Culvert subject to inspection*		Potential CAR Authorisation *Registration*	

WATERCOURSE CROSSING 4
- VIEW DOWNSTREAM



WATER CROSSING 4

1:50

sse Renewables

- Site Boundary
- Turbines
- Watercourse Crossing
- Common Access
- Construction Compound
- Substation
- Hardstanding

Access Track

- Cut
- Upgrade

Scale 1:10,000 @ A3

0 100 200 300 400 500 Meters

N

Figure 10.6.5

Water Crossing 4

Strathy South Wind Farm
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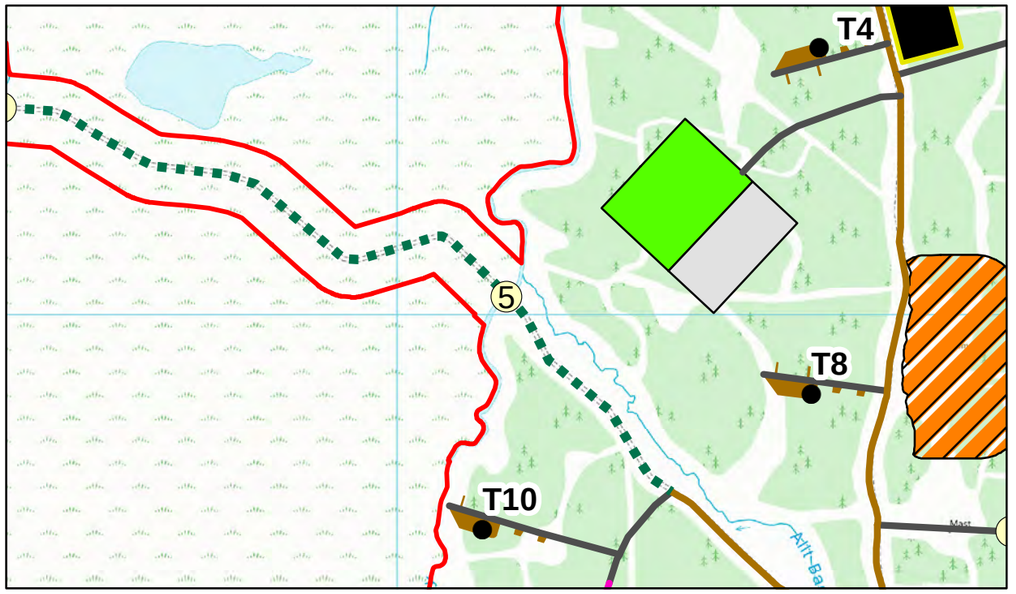
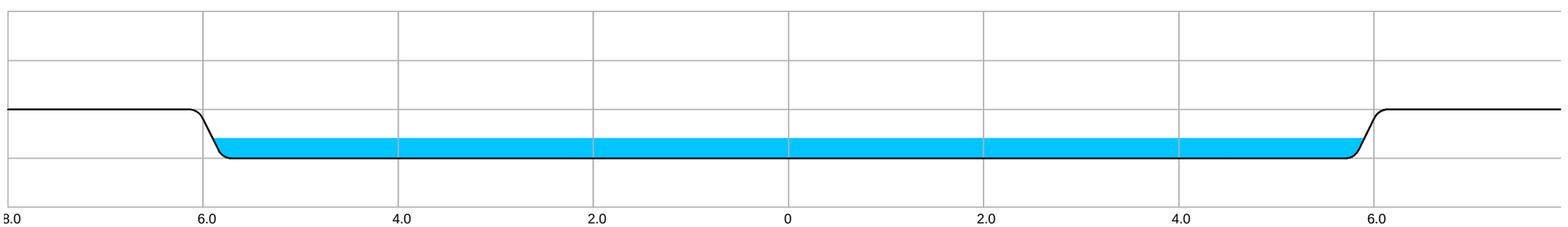
WATERCOURSE CROSSING 5 - VIEW UPSTREAM

WATERCOURSE CROSSING 5 - VIEW DOWNSTREAM



Water Crossing 5
(280178 952030)

Watercourse Width:	11.60m	*Channel Width:*	11.60m
Watercourse Depth:	0.20m	*Channel Depth:*	0.50m
Context:	Surface Watercourse		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type *Existing Bridgeover River Strathy– Upgrade bridge subject to inspection*		Potential CAR Authorisation Registration	



WATER CROSSING 5

1:50

sse Renewables

Key

- Site Boundary
- Turbines
- Watercourse Crossing
- Existing Yellow Bog Track, Surfacing to be Upgraded and Minor Localised Widening
- Borrow Pit
- Temporary Laydown Area
- Construction Compound
- Substation
- Hardstanding

Access Track

- Cut
- Floating
- Upgrade

Scale 1:10,000 @ A3

0 100 200 300 400 500 Meters

N

Figure 10.6.6

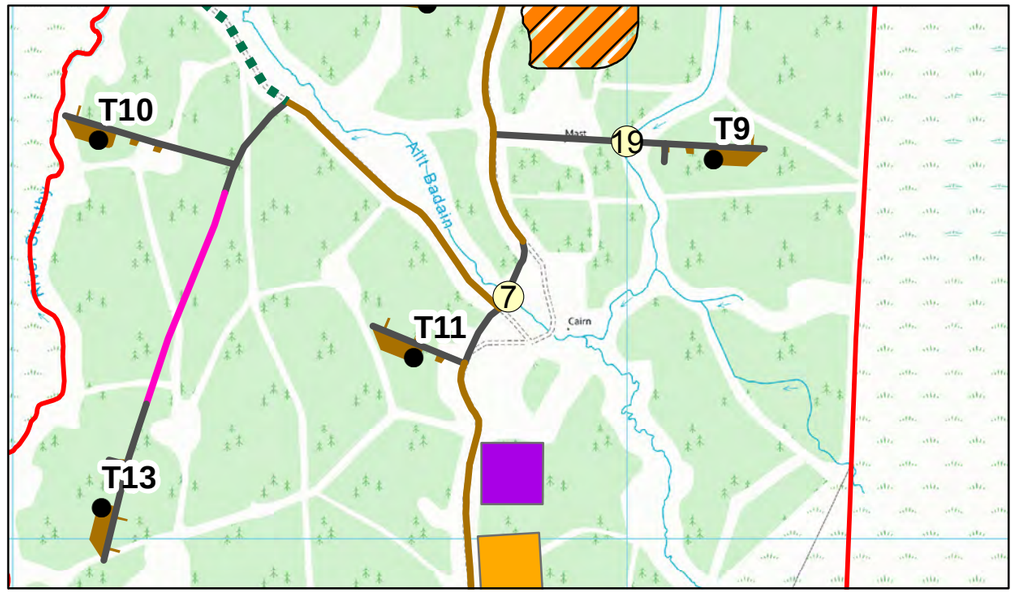
Water Crossing 5

Strathy South Wind Farm
EIAR 2020

WATERCOURSE CROSSING 7
- VIEW UPSTREAM

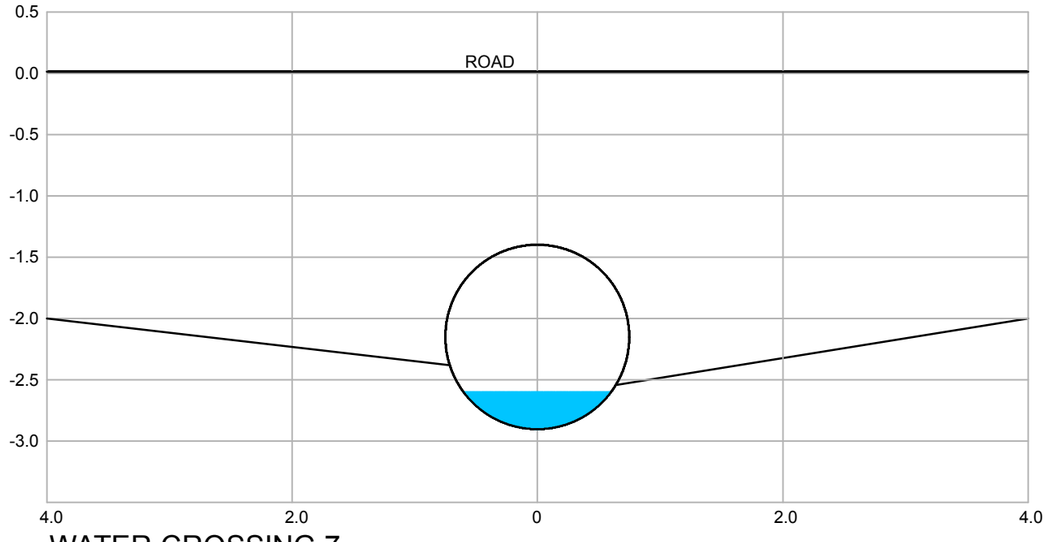
WATERCOURSE CROSSING 7
- VIEW DOWNSTREAM

WATERCOURSE CROSSING 7
- CULVERT



Water Crossing 7
(280807 951395)

Watercourse Width:	0.50 - 2.00m	*Channel Width:*	0.50 – 2.00m
Watercourse Depth:	0.20m	*Channel Depth:*	0.50m
Context:	Surface Watercourse		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type *Existing Culvert– Upgrade Existing Culvert subject to inspection*		Potential CAR Authorisation *Registration*	



WATER CROSSING 7
1:50

sse Renewables

- Site Boundary
- Turbines
- Watercourse Crossing
- Existing Yellow Bog Track, Surfacing to be Upgraded and Minor Localised Widening
- Borrow Pit
- Laydown Area
- Batching Plant
- Hardstanding

Access Track

- Cut
- Floating
- Upgrade

Scale 1:10,000 @ A3
0 100 200 300 400 500 Meters

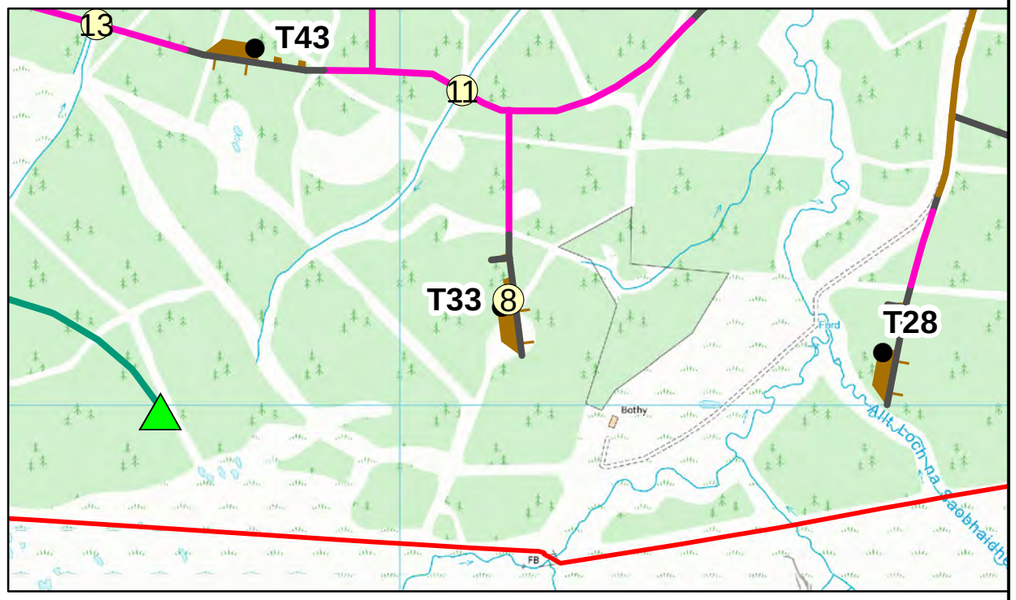
N

Figure 10.6.7

Water Crossing 7

Strathy South Wind Farm
EIAR 2020

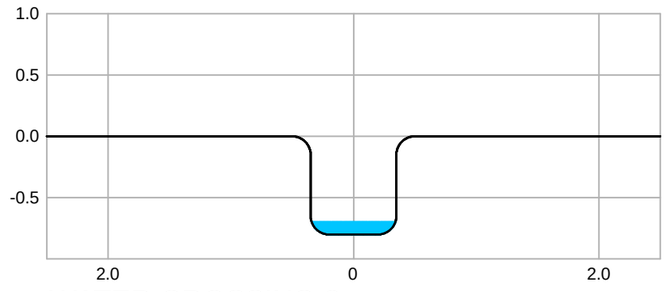
WATERCOURSE CROSSING 8
- VIEW UPSTREAM



Water Crossing 8
(279176 949171)

Watercourse Width:	0.70m	*Channel Width:*	0.70m
Watercourse Depth:	0.10m	*Channel Depth:*	0.80m
Context:	Surface Watercourse		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type *Arch Culvert*		Potential CAR Authorisation *Registration*	

WATERCOURSE CROSSING 8
- VIEW DOWNSTREAM



WATER CROSSING 8

1:50

sse Renewables

- Site Boundary
- Turbines
- Watercourse Crossing
- LiDAR A
- LiDAR Track
- Hardstanding

Access Track

- Cut
- Floating
- Upgrade

Scale 1:10,000 @ A3

0 100 200 300 400 500 Meters

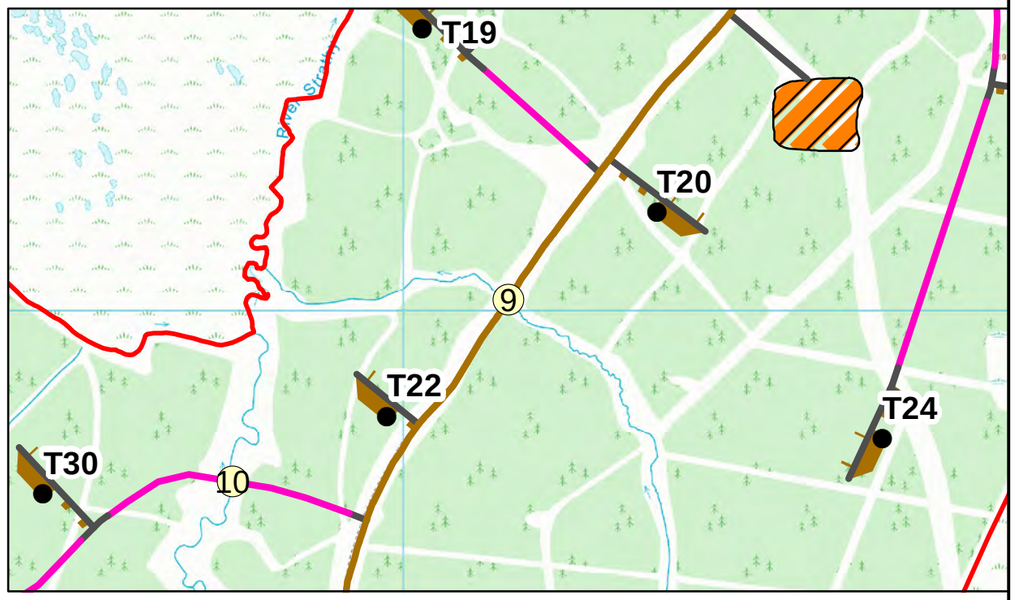
N

Figure 10.6.8

Water Crossing 8

Strathy South Wind Farm
EIAR 2020

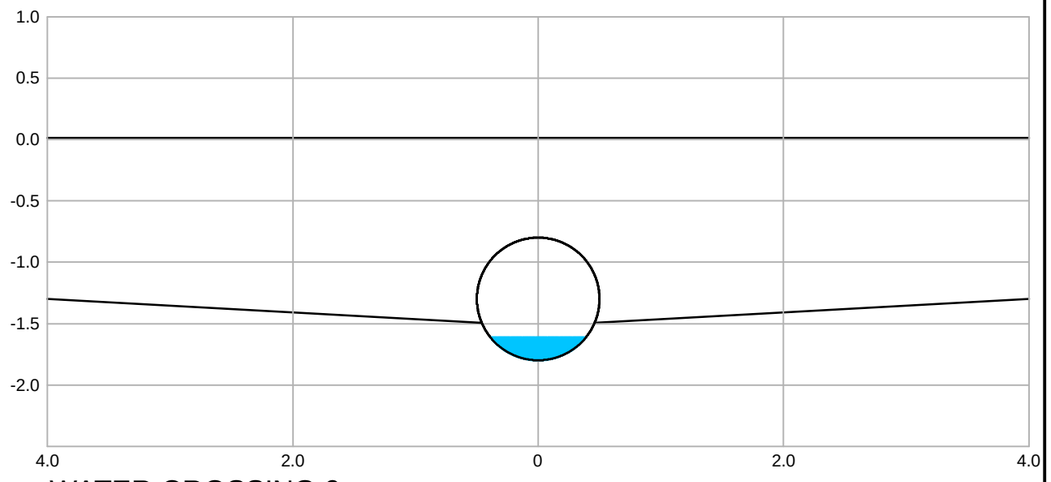
WATERCOURSE CROSSING 9
- VIEW UPSTREAM



Water Crossing 9
(280171 950019)

Watercourse Width:	0.80m	*Channel Width:*	0.80m
Watercourse Depth:	0.20m	*Channel Depth:*	0.40m
Context:	Surface Watercourse		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type *Existing Culvert– Upgrade Existing Culvert subject to inspection*		Potential CAR Authorisation *Registration*	

WATERCOURSE CROSSING 9
- VIEW DOWNSTREAM



WATER CROSSING 9

1:50

sse Renewables

Key

- Site Boundary
- Turbines
- Watercourse Crossing
- Borrow Pit
- Hardstanding

Access Track

- Cut
- Floating
- Upgrade

Scale 1:10,000 @ A3

0 100 200 300 400 500 Meters

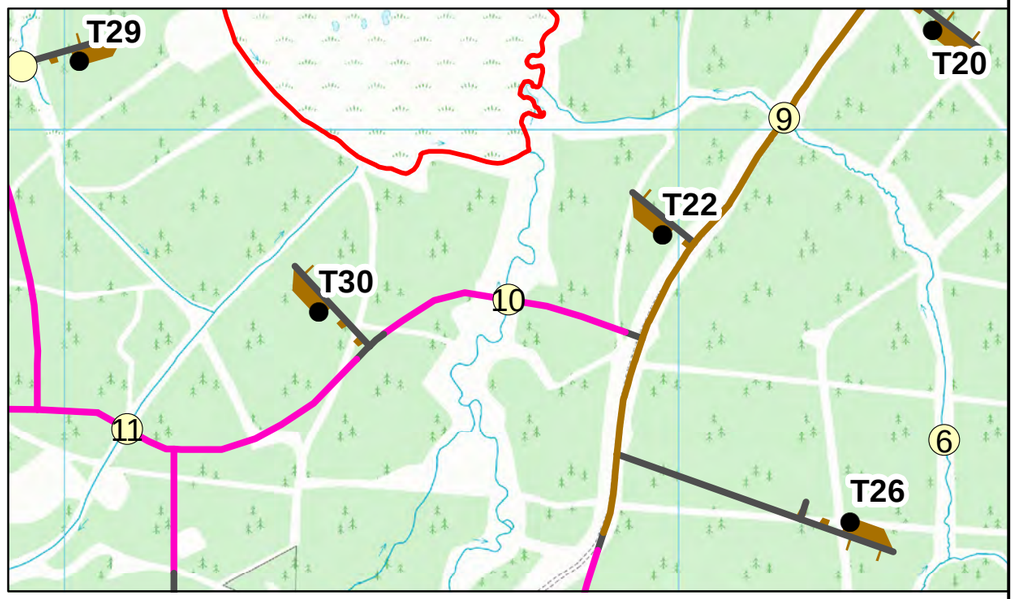
N

Figure 10.6.9

Water Crossing 9

Strathy South Wind Farm
EIAR 2020

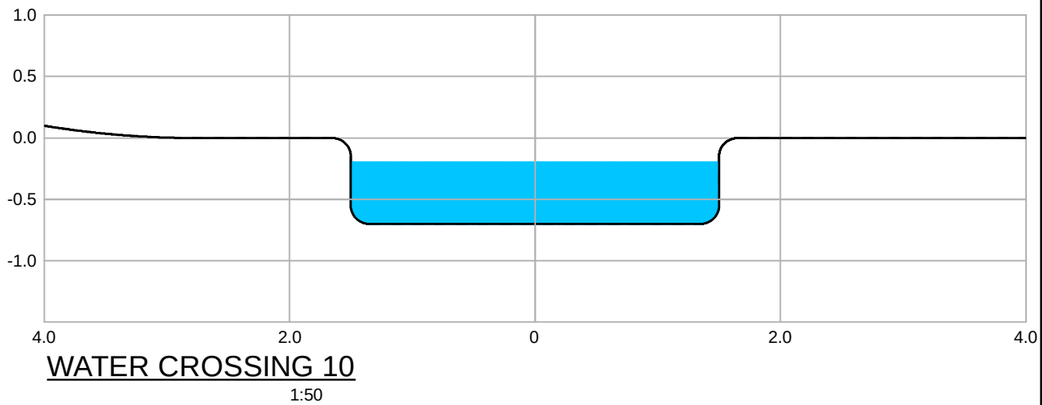
WATERCOURSE CROSSING 10
- VIEW UPSTREAM



Water Crossing 10
(279722 949723)

Watercourse Width:	3.00m	*Channel Width:*	3.00m
Watercourse Depth:	0.50m	*Channel Depth:*	0.70m
Context:	Surface Watercourse		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type *Arch Culvert*		Potential CAR Authorisation *Registration*	

WATERCOURSE CROSSING 10
- VIEW DOWNSTREAM



WATER CROSSING 10
1:50

sse Renewables

- Site Boundary
- Turbines
- Watercourse Crossing
- Hardstanding

Access Track

- Cut
- Floating
- Upgrade

Scale 1:10,000 @ A3
0 100 200 300 400 500 Meters

N

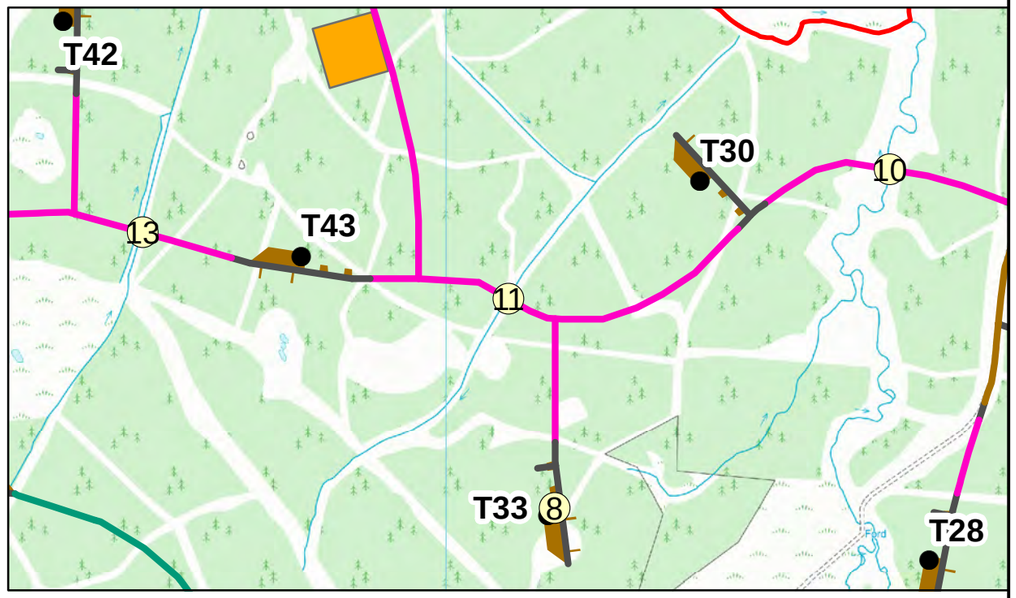
Figure 10.6.10

Water Crossing 10

Strathy South Wind Farm
EIAR 2020

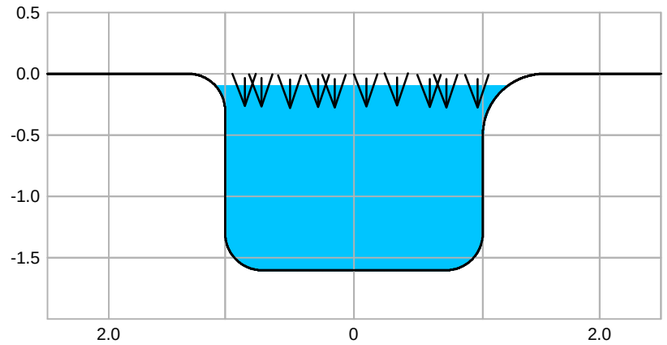
WATERCOURSE CROSSING 11
- VIEW UPSTREAM

WATERCOURSE CROSSING 11
- VIEW DOWNSTREAM



Water Crossing 11
(279101 949512)

Watercourse Width:	2.00m	*Channel Width:*	2.10m
Watercourse Depth:	1.50m	*Channel Depth:*	1.60m
Context:	Surface Watercourse		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type *Arch Culvert*		Potential CAR Authorisation *Registration*	



WATER CROSSING 11
1:50

sse Renewables

- Site Boundary
- Turbines
- Watercourse Crossing
- LiDAR Track
- Laydown
- Hardstanding

Access Track

- Cut
- Floating
- Upgrade

Scale 1:10,000 @ A3
0 100 200 300 400 500 Meters

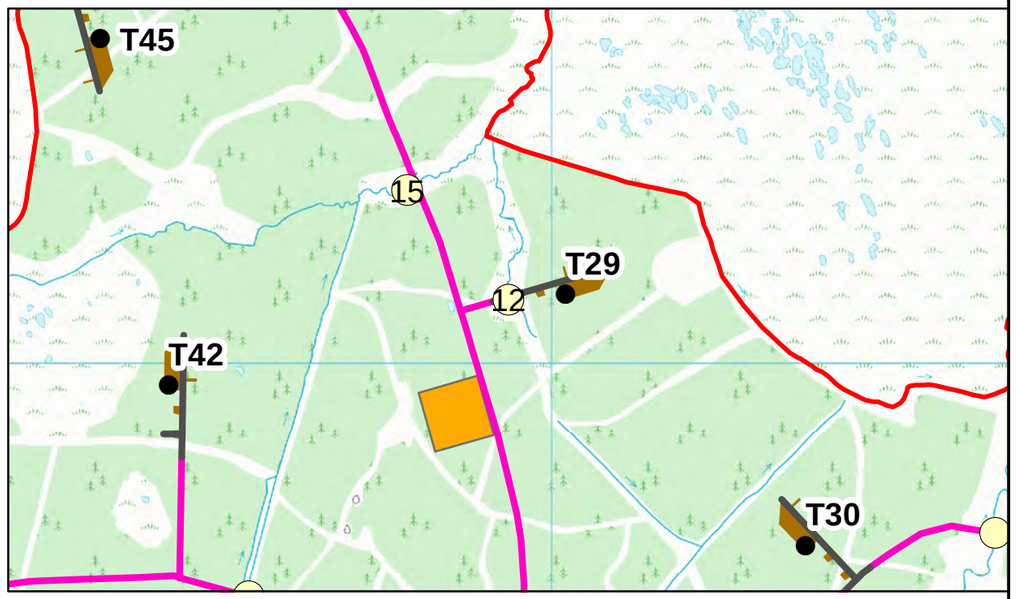
N

Figure 10.6.11

Water Crossing 11

Strathy South Wind Farm
EIAR 2020

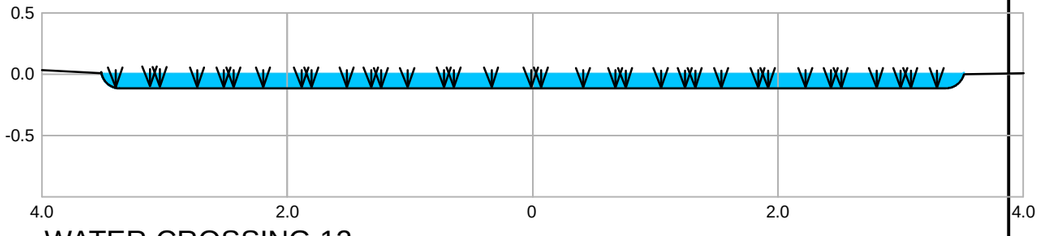
WATERCOURSE CROSSING 12
- VIEW UPSTREAM



Water Crossing 12
(278929 950103)

Watercourse Width:	7.00m	*Channel Width:*	7.00m
Watercourse Depth:	0.10m	*Channel Depth:*	0.10m
Context:	Surface Watercourse (Flush)		
Bed Material:	Peat		
Gradient:	Gentle		
Proposed Crossing Type *Arch Culvert*		Potential CAR Authorisation *Registration*	

WATERCOURSE CROSSING 12
- VIEW DOWNSTREAM



WATER CROSSING 12
1:50

sse Renewables

- Site Boundary
- Turbines
- Watercourse Crossing
- Laydown
- Hardstanding

Access Track

- Cut
- Floating

Scale 1:10,000 @ A3

0 100 200 300 400 500 Meters

N

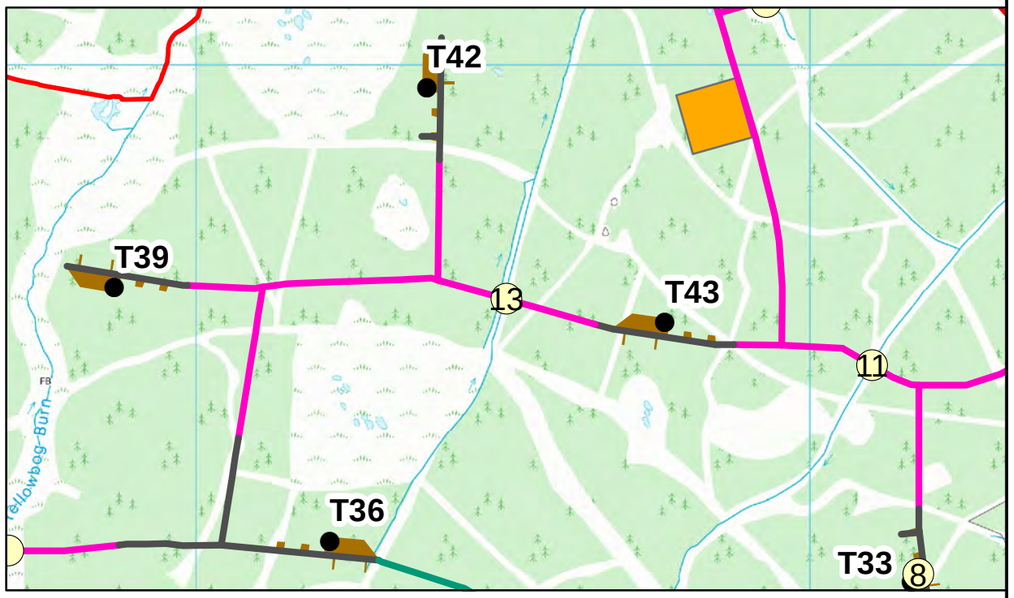
Figure 10.6.12

Water Crossing 12

Strathy South Wind Farm
EIAR 2020

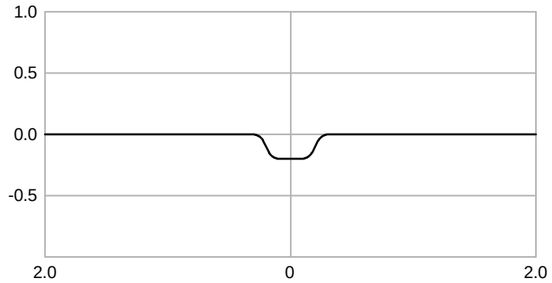
WATERCOURSE CROSSING 13
- VIEW UPSTREAM

WATERCOURSE CROSSING 13
- VIEW DOWNSTREAM



Water Crossing 13
(278505 949620)

Watercourse Width:	Dry at time of inspection	*Channel Width:*	0.50m
Watercourse Depth:	Dry at time of inspection	*Channel Depth:*	0.20m
Context:	Surface Watercourse		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type Arch Culvert		Potential CAR Authorisation *Registration*	



WATER CROSSING 13
1:50

sse Renewables

Key

- Site Boundary
- Turbines
- Watercourse Crossing
- LiDAR Track
- Laydown Area
- Hardstanding

Access Track

- Cut
- Floating

Scale 1:10,000 @ A3
0 100 200 300 400 500 Meters

N

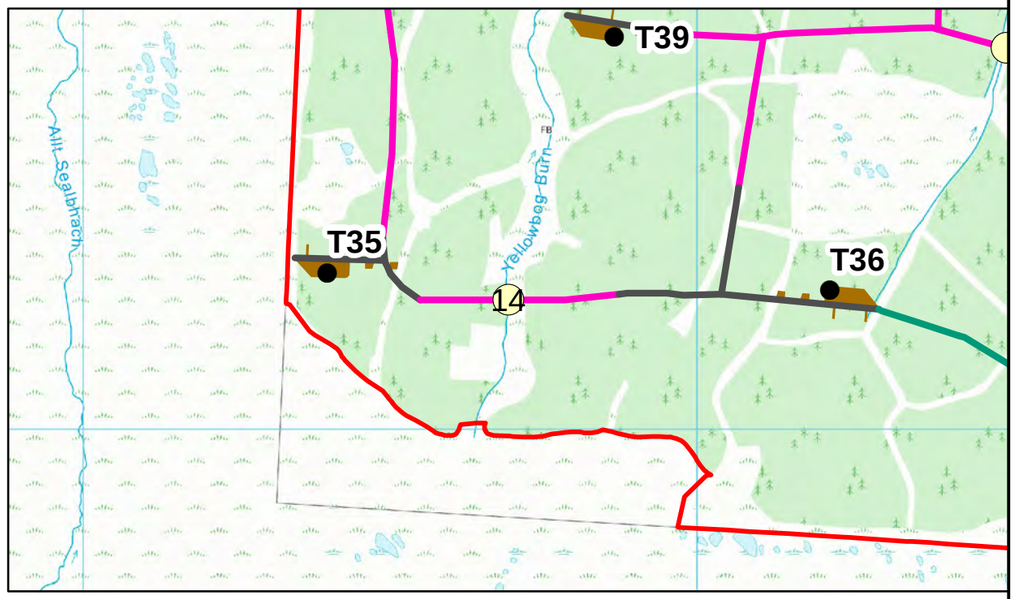
Figure 10.6.13

Water Crossing 13

Strathy South Wind Farm
EIAR 2020

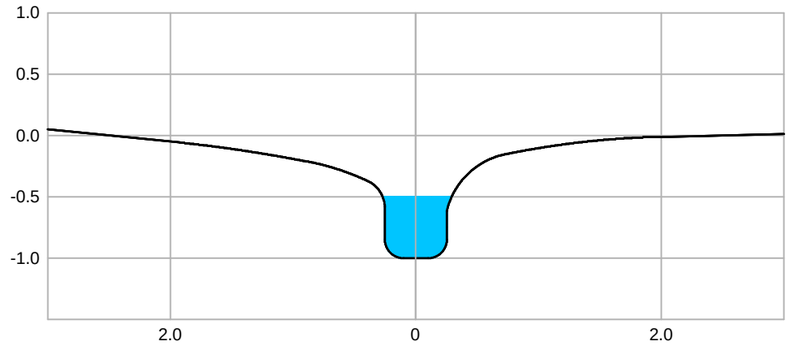
WATERCOURSE CROSSING 14
- VIEW UPSTREAM

WATERCOURSE CROSSING 14
- VIEW DOWNSTREAM



Water Crossing 14
(277693 949210)

Watercourse Width:	0.50m	*Channel Width:*	5.00m
Watercourse Depth:	0.50m	*Channel Depth:*	1.00m
Context:	Surface Watercourse		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type *Arch Culvert*		Potential CAR Authorisation *Registration*	



WATER CROSSING 14
1:50

sse Renewables

- Site Boundary
- Turbines
- Watercourse Crossing
- LiDAR Track
- Hardstanding

Access Track

- Cut
- Floating

Scale 1:10,000 @ A3
0 100 200 300 400 500 Meters

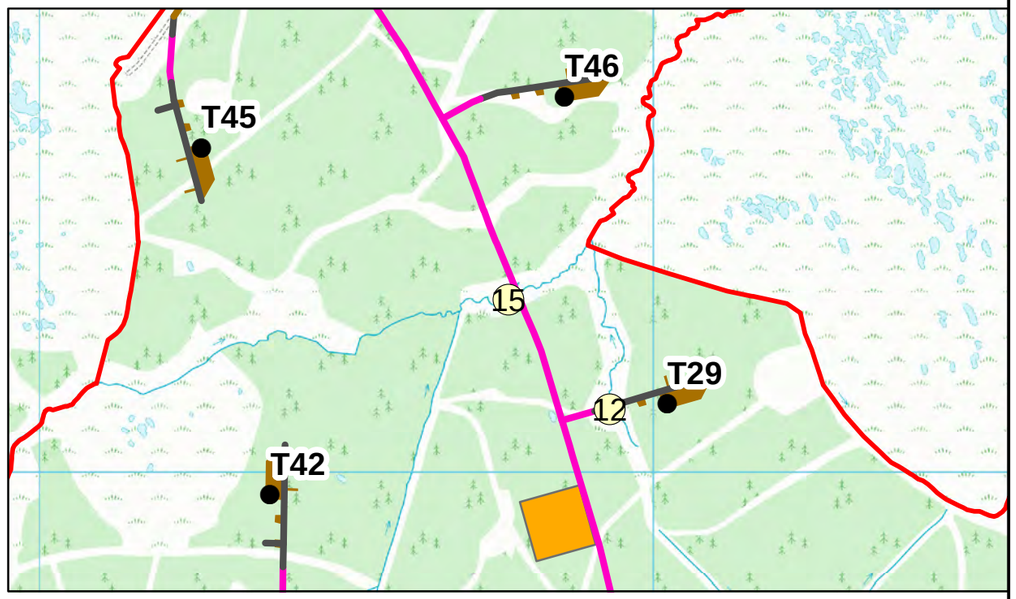
N

Figure 10.6.14

Water Crossing 14

Strathy South Wind Farm
EIAR 2020

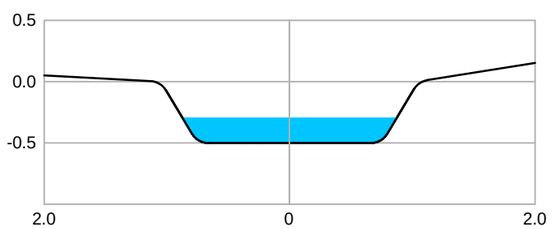
WATERCOURSE CROSSING 15
- VIEW UPSTREAM



Water Crossing 15
(278763 950282)

Watercourse Width:	1.50m	*Channel Width:*	2.10m
Watercourse Depth:	0.20m	*Channel Depth:*	0.50m
Context:	Surface Watercourse		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type Arch Culvert		Potential CAR Authorisation Registration	

WATERCOURSE CROSSING 15
- VIEW DOWNSTREAM



WATER CROSSING 15
1:50

sse Renewables

Key

- Site Boundary
- Turbines
- Watercourse Crossing
- Laydown Area
- Hardstanding

Access Track

- Cut
- Floating
- Upgrade

Scale 1:10,000 @ A3
0 100 200 300 400 500 Meters

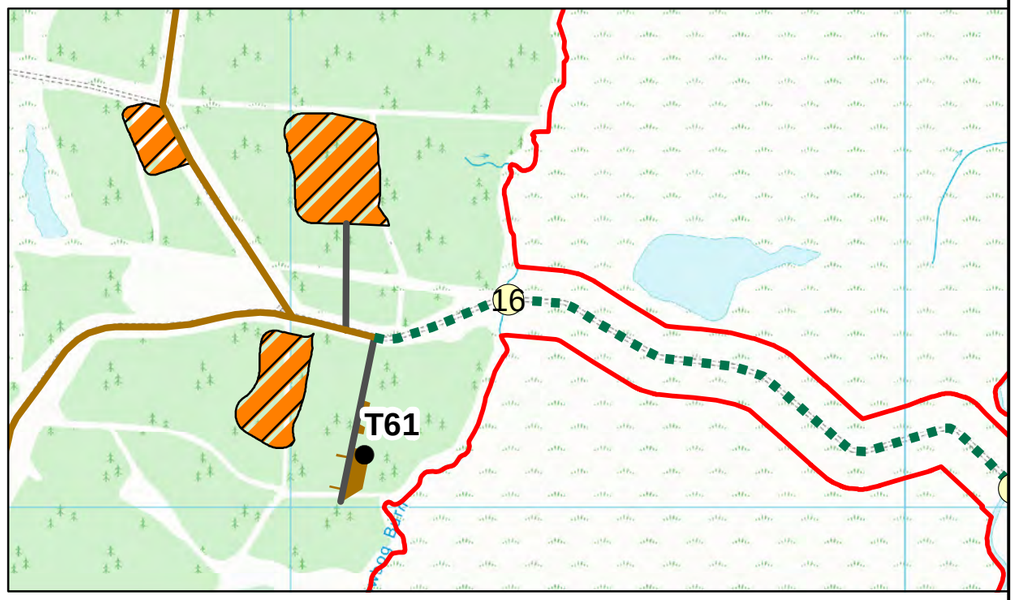
N

Figure 10.6.15

Water Crossing 15

Strathy South Wind Farm
EIAR 2020

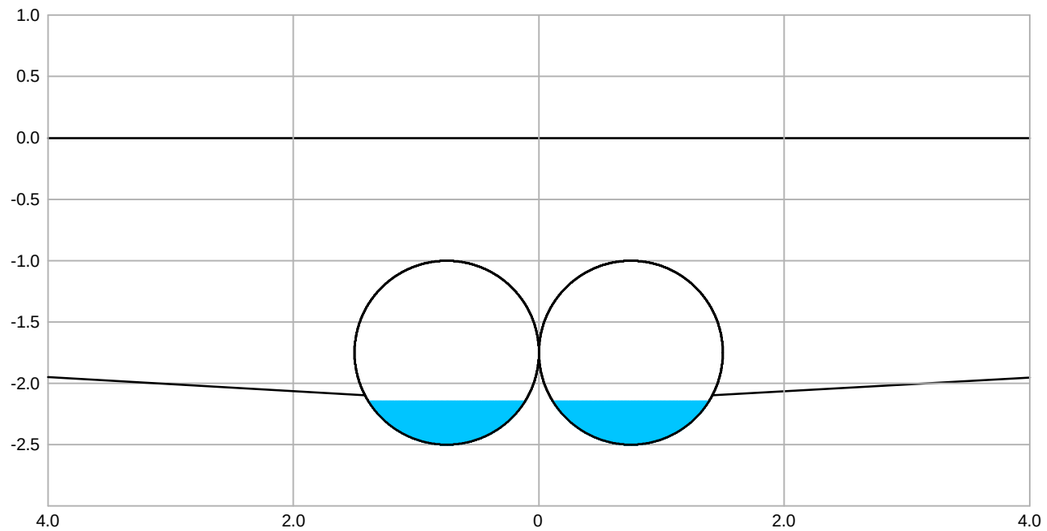
WATERCOURSE CROSSING 16
- VIEW UPSTREAM



Water Crossing 16
(279354 952339)

Watercourse Width:	3.00m	*Channel Width:*	3.00m
Watercourse Depth:	0.20m	*Channel Depth:*	0.30m
Context:	Surface Watercourse		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type *Existing Culvert– Upgrade Existing Culvert subject to inspection*		Potential CAR Authorisation *Registration*	

WATERCOURSE CROSSING 16
- VIEW DOWNSTREAM



WATER CROSSING 16

1:50

sse Renewables

Key

- Site Boundary
- Turbines
- Watercourse Crossing
- Existing Yellow Bog Track, Surfacing to be Upgraded and Minor Localised Widening
- Borrow Pit
- Hardstanding

Access Track

- Cut
- Upgrade

Scale 1:10,000 @ A3

0 100 200 300 400 500 Meters

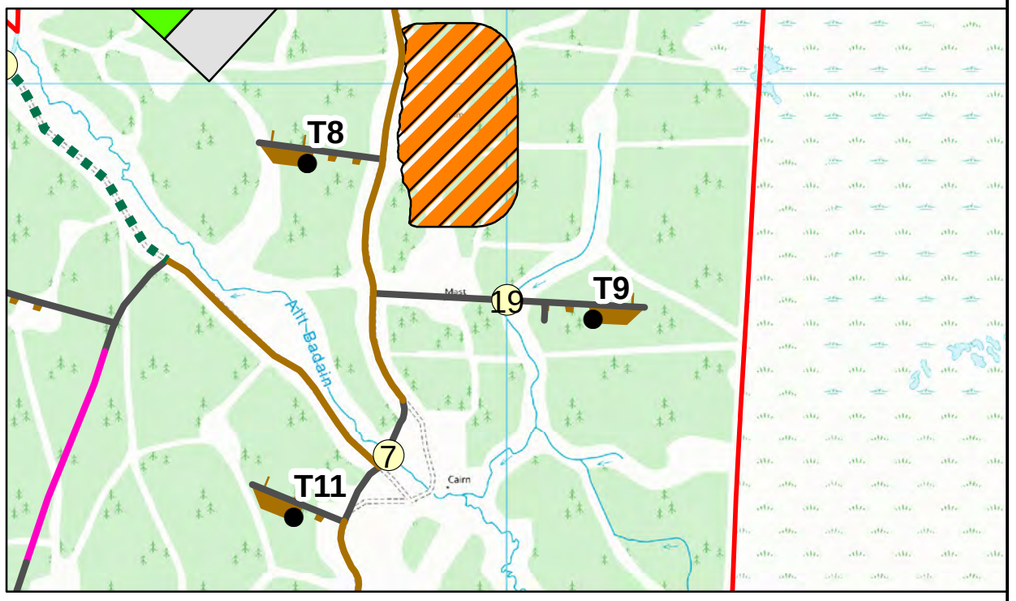
N

Figure 10.6.16

Water Crossing 16

Strathy South Wind Farm
EIAR 2020

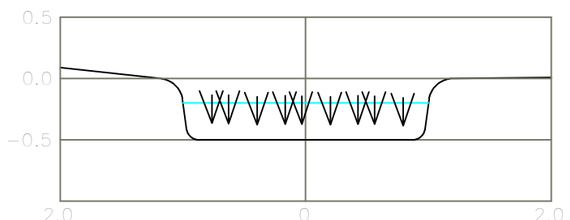
WATERCOURSE CROSSING 19
- VIEW UPSTREAM



Water Crossing 19
(281000 951647)

Watercourse Width:	2.00m	*Channel Width:*	2.00m
Watercourse Depth:	0.30m	*Channel Depth:*	0.30m
Context:	Surface Watercourse (flush)		
Bed Material:	Not Proven		
Gradient:	Gentle		
Proposed Crossing Type *Arch Culvert*		Potential CAR Authorisation *Registration*	

WATERCOURSE CROSSING 19
- VIEW DOWNSTREAM



WATER CROSSING 19
1:50

sse Renewables

- Site Boundary
- Turbines
- Watercourse Crossing
- Existing Yellow Bog Track, Surfacing to be Upgraded and Minor Localised Widening
- Borrow Pit
- Temporary Laydown Area
- Substation
- Hardstanding

Access Track

- Cut
- Floating
- Upgrade

Scale 1:10,000 @ A3

0 100 200 300 400 500 Meters

N

Figure 10.6.17

Water Crossing 19

Strathy South Wind Farm
EIAR 2020

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