



Longcroft Wind Farm

Technical Appendix 10.3

Watercourse Crossing Schedule

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Date	30/10/2023
Ref	5980

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1 Introduction


- 1.1.1 This Watercourse Crossing Schedule (WCS) provides details of the watercourse crossings which are required for the new and existing infrastructure at Longcroft Wind Farm (the proposed development). The number of crossings has been minimised as far as practicable through design iterations and through utilising existing tracks and crossings where feasible. Where a crossing is required, this appendix provides relevant information including watercourse description, likely crossing type and design recommendations.
- 1.1.2 The basis of the WCS and recommendations is based upon the following design guidance:
- The Construction Industry Research and Information Association (CIRIA) Culvert, Screen and Operation Manual (CIRIA,2019);
 - Scottish Environment Protection Agency (SEPA) Good Practice Guide, River Crossings, 2nd Edition; and
 - Scottish Environment Protection Agency (SEPA) Good Practice Guide, Bank Protection, Rivers and Lochs, 1st Edition.
- 1.1.3 Hydrological site walkovers were conducted at the site 8 August 2023, with the hydrological conditions reviewed by a suitably experienced hydrologist.
- 1.1.4 The local topography of the site is characterised by the Lammermuir Hills. There is a prominent valley that runs centrally through the site, with several hills located in the east and west. The north of the site reaches a more consistent gradient with gentle slopes.
- 1.1.5 The hydrology of the site consists of two watercourses, Soonhope Burn and Whalplaw Burn that drain from north to south across the site. There are several unnamed tributaries of these burns that additionally drain the site. This includes tributaries of the Kelphope Burn in the west of the site. The Whalplaw Burn and Soonhope Burn confluence at E350790, N654361, where it becomes the Cleekhimin Burn, north of the proposed site entrance.
- 1.1.6 Hogs Burn and Jock's Burn are located within the site in the west. These watercourses drain surface water from west to east, outwith the site.

- 1.1.7 The site is located within the River Tweed surface water catchment within the Solway Tweed River Basin District. All surface waters within the site are classified by SEPA as having an overall condition of 'Good' under the Water Framework Directive (WFD).
- 1.1.8 Watercourses identified on site which are considered to require a crossing have been identified on Ordnance Survey 1:50k mapping. Additional watercourse crossings were identified during the site walkover. As outlined below, all Watercourse Crossings (WC) are likely to be in the form of Closed Culverts or Bottomless Arched Culverts in accordance with SEPA's River Crossing Guidance. These crossings are all <2m wide and situated on smaller watercourses. This is with the exception of WC11 which requires a single span bridge across a 5m width watercourse, and WC01 which is an existing bridge. The proposed watercourse crossings are shown on Figure 1.
- 1.1.9 In line with Controlled Activities (Scotland) Regulations 2011 (as amended) guidance, all crossings except WC01 and WC11 are considered to be situated on minor watercourses which are not identified on 1:50k mapping, and are therefore unlikely to require CAR authorisation. Following detailed design stages, it is envisaged that the appropriate level of CAR authorisation would be identified for WC01 and WC11.
- 1.1.10 In addition to the 1:50k scale waterbodies identified, there are likely to be other small hydrological features, including peatland flushes, where hydrological connection between upslope and downslope of the proposed development will be required. These areas are not considered to require a watercourse crossing due to their scale, and hydrological connectivity will instead be maintained through drainage design, including regular spacing of cross drainage, and other mitigation measures outlined within the Construction Environmental Management Plan (CEMP).


2 Watercourse Crossing Schedule

Table 1: Watercourse Crossing 1 (WC01)

Watercourse Crossing 1 (WC01)	
Location Description	Approx 50m on existing track from site entrance
Grid Co-ordinates	352939, 653754
Watercourse Name	Allers Burn
Watercourse Catchment	Whalplaw Burn
Watercourse Description	Small watercourse rises on Lylestone Hill before confluencing with Whalplaw Burn. Water drains from surrounding farmland and forestry. Watercourse had medium flow and level, approx. 0.5m width. Vegetation is present along the banks of the watercourse.
Existing or New Crossing	Existing
Proposed Crossing Type(s)	Single span bridge



View upstream (north) of Allers Burn



View downstream (south) of Cleekhimin Burn

Table 2: Watercourse Crossing 2 (WC02)





Watercourse Crossing 2 (WC02)			
Location Description	Approx 1km on existing track from site entrance.	 <p><i>View upstream (east) Unnamed Burn/Flush</i></p>	 <p><i>View downstream (west) of Whalplaw Burn</i></p>
Grid Co-ordinates	353905, 653831		
Watercourse Name	Unnamed burn/flush		
Watercourse Catchment	Whalplaw Burn		
Watercourse Description	Flush of surface water runoff on brow of hill, is very vegetated and wet underfoot. No defined channel at proposed new access track.		
Existing or New Crossing	New		
Proposed Crossing Type(s)	Closed culvert		



Table 3: Watercourse Crossing 3 (WC03)

Watercourse Crossing 3 (WC03)			
Location Description	Located approx. 320m north east of T1.		
Grid Co-ordinates	354458, 654707		
Watercourse Name	Foxes Cleugh		
Watercourse Catchment	Whalplaw Burn		
Watercourse Description	No defined watercourse channel at proposed access track, an approx. 30 m wide flush area with minor ditches with rushes and sphagnum mosses present. Vegetation associated with wetter conditions are present at brow of Peat Law.		
Existing or New Crossing	New		
Proposed Crossing Type(s)	Bottomless arch or closed culvert		

View upstream (west) of Foxes Cleugh

View downstream (east) of Whalplaw Burn

Table 4: Watercourse Crossing 4 (WC04)


Watercourse Crossing 4 (WC04)			
Location Description	Located approx. 400m south west of T2.		
Grid Co-ordinates	354629, 654930		
Watercourse Name	Thorny Cleugh		
Watercourse Catchment	Whalplaw Burn		
Watercourse Description	Thorny Cleugh at low level and low flow, with very small channel present within 25m wide flush, that extends south of the track.		
Existing or New Crossing	New		
Proposed Crossing Type(s)	Bottomless arch or closed culvert		

View upstream (south) of Earnscleugh Water


View downstream (north west) of Whalplaw Burn

Table 5: Watercourse Crossing 5 (WC05)

Watercourse Crossing 5 (WC05)	
Location Description	Located approx. 170m south of T7.
Grid Co-ordinates	355786, 656172
Watercourse Name	Unnamed burn
Watercourse Catchment	Jock's Burn, Earnsclough Water
Watercourse Description	Small watercourse channel crosses proposed access track. Watercourse is approx. 0.5m wide with low flow and level. A culvert is required to maintain hydrological connectivity of the unnamed burn.
Existing or New Crossing	New
Proposed Crossing Type(s)	Bottomless arch or closed culvert



View of upslope (west) of unnamed burn



View downstream (east) of unnamed burn

Table 6: Watercourse Crossing 6 (WC06)



Watercourse Crossing 6 (WC06)			
Location Description	Located approx. 470m south of T12.		
Grid Co-ordinates	356073, 657757		
Watercourse Name	Unnamed burn		
Watercourse Catchment	Jock's Burn, Earnsclough Water		
Watercourse Description	Watercourse channel is evident approx. 80m upslope of the track, with a flush area which is wet underfoot with rushes present. The channel becomes defined close to the proposed access track measuring 1.5m bank to bank with a water course width of 0.3m.		
Existing or New Crossing	New		
Proposed Crossing Type(s)	Bottomless arch or closed culvert	<p><i>View of land upslope (north west) of unnamed burn</i></p>	<p><i>View downstream (south) of unnamed burn</i></p>

Table 7: Watercourse Crossing 7 (WC07)



Watercourse Crossing 7 (WC07)			
Location Description	Located approx. 200m north of T12.	 <p><i>View upstream (north) of Earnscleugh Water</i></p>	 <p><i>View downstream (south) of Earnscleugh Water</i></p>
Grid Co-ordinates	356384, 658308		
Watercourse Name	Unnamed burn		
Watercourse Catchment	Jock's Burn, Earnscleugh Water		
Watercourse Description	No defined channel where watercourse crosses the proposed access track, wide flush area of rushes. The start of main channel is evident south of access track. Cross drainage will be required to maintain hydrological connectivity between head waters and main channel.		
Existing or New Crossing	New		
Proposed Crossing Type(s)	Bottomless arch or closed culvert		

Table 8: Watercourse Crossing 8 (WC08)



Watercourse Crossing 8 (WC08)			
Location Description	Located along existing track proposed to be upgraded.	 <p><i>View of existing cross drainage across track (south)</i></p>	 <p><i>View of existing cross drainage across track (north)</i></p>
Grid Co-ordinates	355626, 656804		
Watercourse Name	Trackside drainage		
Watercourse Catchment	Whalplaw Burn		
Watercourse Description	Current cross drainage on existing track from previous drainage design. Connects runoff from degraded habitat upslope which drains to Whalplaw Burn downslope.		
Existing or New Crossing	Existing		
Proposed Crossing Type(s)	Closed culvert		

Table 9: Watercourse Crossing 9 (WC09)





Watercourse Crossing 9 (WC09)			
Location Description	Located along existing track proposed to be upgraded, upslope of T15.	 <p><i>View of existing cross drainage across track (east)</i></p>	 <p><i>View of existing cross drainage across track (north)</i></p>
Grid Co-ordinates	355478, 656868		
Watercourse Name	Trackside drainage		
Watercourse Catchment	Whalplaw Burn		
Watercourse Description	Current cross drainage on existing track from previous drainage design. Connects runoff from degraded habitat upslope which drains to Whalplaw Burn downslope.		
Existing or New Crossing	Existing		
Proposed Crossing Type(s)	Closed culvert		

Table 10: Watercourse Crossing 10 (WC10)

Watercourse Crossing 10 (WC10)	
Location Description	Located north of T15 hardstanding.
Grid Co-ordinates	355218, 656663
Watercourse Name	Trackside drainage
Watercourse Catchment	Whalplaw Burn
Watercourse Description	Current cross drainage on existing track from previous drainage design. Connects runoff from degraded habitat upslope which drains to Whalplaw Burn downslope.
Existing or New Crossing	Existing
Proposed Crossing Type(s)	Closed culvert



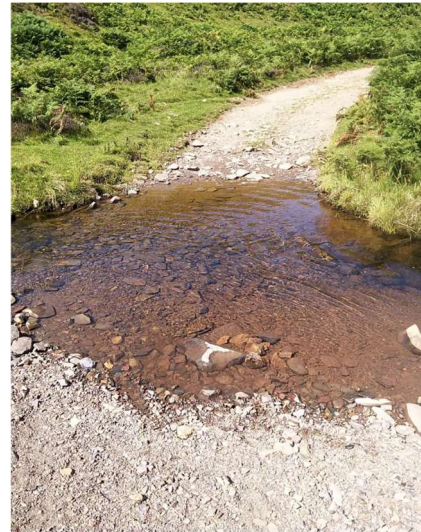
View of existing cross drainage across track (east)



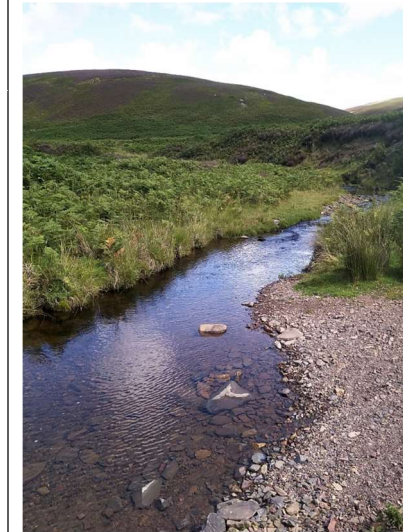
View of existing cross drainage and culvert across track (north)

Table 11: Watercourse Crossing 11 (WC11)

Watercourse Crossing 11 (WC11)	
Location Description	Located between T15 and T16.
Grid Co-ordinates	354905, 656616
Watercourse Name	Whalplaw Burn
Watercourse Catchment	Whalplaw Burn
Watercourse Description	At the existing crossing Whalplaw Burn is approx. 5m wide where it crosses the existing track, and is approx. 3m wide upstream and downstream. There is no existing infrastructure in place, and is crossed as a ford. The watercourse is approx. 12m width from either sloping bankside, The channel is approx. 0.3m deep with a cobbled bed.
Existing or New Crossing	Existing
Proposed Crossing Type(s)	Single span bridge




View across existing water crossing (ford) on Whalplaw Burn




View upstream (north) of Whalplaw Burn

Table 12: Watercourse Crossing 12 (WC12)

Watercourse Crossing 12 (WC12)	
Location Description	Located 375m north of T18.
Grid Co-ordinates	353959, 656031
Watercourse Name	Unnamed burn
Watercourse Catchment	Whalplaw Burn
Watercourse Description	Surface water pools with sphagnum moss present. The pools are moderate depth with low flow.
Existing or New Crossing	New
Proposed Crossing Type(s)	Bottomless arch or closed culvert



View of surface water pools (north) of unnamed burn



View of surface water pools (south) of unnamed burn

3 Conclusions and Recommendations

- 3.1.1 This WCS has been produced to highlight the presence of watercourses which are required to be intersected by the proposed wind farm tracks and provide relevant information on the nature of the crossings, likely crossing type required and design recommendations.
- 3.1.2 Ultimately the recommendations set out in the WCS are compliant with best practice design guidance and proportionate to the hydrological regimes encountered during the site survey.
- 3.1.3 Following planning permission, detailed design of the watercourse crossings will be subject to authorisation from SEPA under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (SEPA,2011).

4 References

- Construction Industry Research and Information Association (2019). Culvert, screen and outfall manual (C786). Available at: <https://www.thenbs.com/PublicationIndex/documents/details?Pub=CI&DocID=328474> Accessed on 18 October 2023
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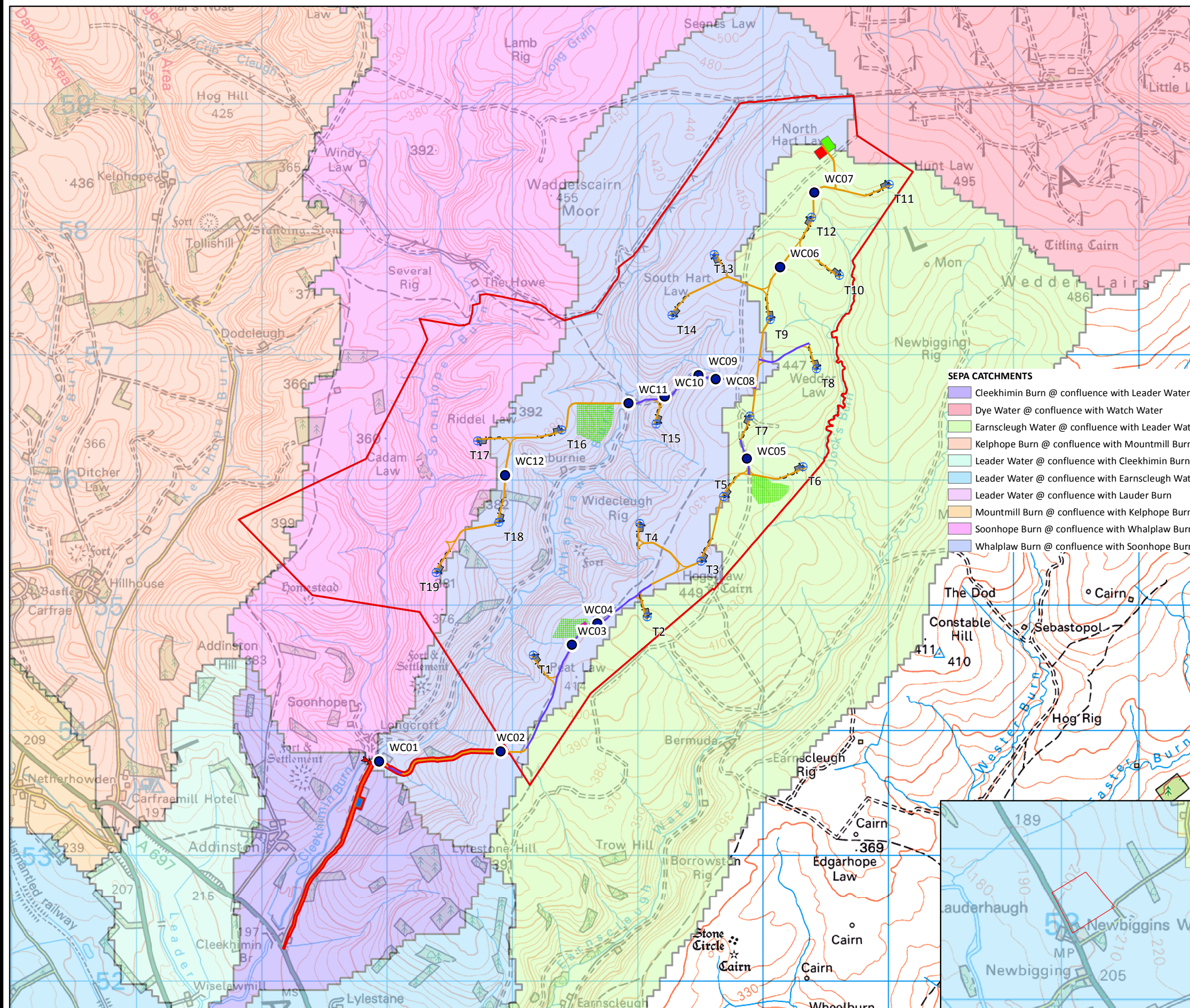


LONGCROFT WIND FARM WATERCOURSE CROSSING SCHEDULE

FIGURE 1

WATERCOURSE CROSSINGS

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- SEPA CATCHMENTS**
- Cleekhemin Burn @ confluence with Leader Water
 - Dye Water @ confluence with Watch Water
 - Earnsclough Water @ confluence with Leader Water
 - Kelphope Burn @ confluence with Mountmill Burn
 - Leader Water @ confluence with Cleekhemin Burn
 - Leader Water @ confluence with Earnsclough Water
 - Leader Water @ confluence with Lauder Burn
 - Mountmill Burn @ confluence with Kelphope Burn
 - Soonhope Burn @ confluence with Whalplaw Burn
 - Whalplaw Burn @ confluence with Soonhope Burn

- KEY**
- Site Boundary
 - Turbines
 - Upgraded Tracks
 - Proposed Tracks
 - Existing Public Road
 - Watercourse Crossing
 - Temporary Construction Compound
 - Temporary Concrete Batching Plant
 - Substation Compound
 - Site Entrance
 - Hardstandings
 - Borrow Pit Search Areas
 - Battery Storage Compound
 - Watercourse Crossings

LAYOUT DWG: 04728-RES-LAY-DR-PE-003
T-LAYOUT NO.: PSCOLCF021

DRAWING NUMBER

SCALE - 1:30,000 @ A3

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