Appendix 8.3: Watercourse Crossing Assessment

Giants Burn Wind Farm

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1.1 Introduction

Green Cat Renewables (GCR) have been commissioned to carry out an assessment of the watercourse crossings required as part of the proposed Giants Burn Wind Farm (the Proposed Development) located c.1.5km west of Sandbank and c.1.3km north-west of Dunoon. This report forms a technical appendix to Chapter 8 - Hydrology and Hydrogeology, of the Environmental Impact Assessment (EIA) Report, and should be read with reference to that chapter. The construction phase of the Proposed Development will utilise existing infrastructure, where possible, and new track construction will also be required.

The primary objective of this assessment is to identify and characterise watercourses at the proposed crossing points, assess their ecological and hydrological significance, and provide recommendations for the design and construction of crossings to minimise environmental impacts. This includes considerations for maintaining hydrological connectivity, ensuring fish passage, and preserving water quality and habitat integrity.

1.2 Methodology

The assessment methodology follows legislation and guidance set out in the following documentation:

- UK Forestry Standard (UKFS) Guidelines for Watercourse Crossings, Forestry Commission, 2017
- Water Environment (Controlled Activities) (Scotland) Regulations, Scottish Environmental Protection Agency (SEPA), 2011
- SEPA Guidance Document on Watercourse Crossings, SEPA, 2010
- Culvert Design and Operation Guide, Construction Industry Research and Information Association (CIRIA), 2010
- Water Framework Directive (2000/60/EC), European Union, 2000

The initial desk study used 1:10,000 scale OS mapping to identify which watercourses would potentially require crossings. In total, five new crossings are required, in addition to upgrades to a further seven along existing forestry tracks. Following this, an on-site survey of the identified crossings was conducted to gather specific information for each watercourse. This visit took place on the 23rd to 25th of March 2025. One new water crossing location was visited during this visit whilst it was noted that the other four new crossings are currently located within forestry, making them difficult to access. It was determined that these crossing locations should be surveyed fully following felling to allow an accurate assessment of the watercourse channel. The weather during these visits was generally dry and sunny.

An additional seven watercourse crossings will be required as part of the Proposed Development however, these are sited upon existing forestry tracks. These tracks may be widened however the structure of the crossings will remain largely the same.

Information collected during the site visit was used to guide the selection of appropriate crossing types. The construction of the Proposed Development will involve laying access roads that require crossings over natural watercourses and other features such as flush zones. Historically, minor watercourses were crossed by placing circular culverts in the stream bed and building the track on an embankment above the culvert. This method, along with associated best practices, is outlined in the UK Forestry Standard Guidelines[1] and has been widely used in forestry access road construction. However, the acceptable design for watercourse crossings has evolved, with ecological status now being a key consideration in addition to river volume and flow conveyance.

More detailed information on the new and existing watercourse crossings is provided in Section 1.4 and shown on Figure 8.1 - Hydrological Context Map.

[1] https://www.forestresearch.gov.uk/publications/uk-forestry-standard-2023/ (Date Accessed: 12/06/2025)

Table 1.1 - Watercourse Crossings

Watercourse Number	Watercourse Name (Shown on 1:10,000 scale OS mapping)	Easting	Northing	Existing Crossing?	Type of Crossing
1	Allt na Criche	213337	681350	No	Bottomless Arch Culvert
2	Allt na Criche	214277	680501	Yes	Existing to be upgraded
3	Unnamed drain/tributary of Allt a Chromain	215122	679605	Yes	Existing to be upgraded
4	Allt a Chromain	215131	679592	Yes	Existing to be upgraded
5	Unnamed drain/tributary of Allt a Chromain	215252	679436	Yes	Existing to be upgraded
6	Unnamed drain/tributary of Allt a Chromain	215309	679389	Yes	Existing to be upgraded
7	Unnamed drain/tributary of Allt a Chromain	215559	679235	Yes	Existing to be upgraded
8	Unnamed drain/tributary of Eas a Chaibeil	215816	678927	Yes	Existing to be upgraded
9	Unnamed drain/tributary of Eas a Chaibeil	215738	678692	No	Bottomless Arch Culvert
10	Unnamed drain/tributary of Eas a Chaibeil	215268	678784	No	Bottomless Arch Culvert
11	Unnamed drain/tributary of Allt a Chromain	215018	679003	No	Bottomless Arch Culvert
12	Allt a Chromain	214418	679406	No	Flush Crossing

1.3 Limitations

The assessment has made every effort to identify the necessary watercourse crossings for the construction activities related to the Proposed Development. The locations surveyed are based on the most recent layout proposed and any revisions or micrositing to the layout may lead to different requirements. Several crossing locations were inaccessible due to forestry and dense vegetation and therefore will be evaluated following felling and prior to construction.

Additionally, it is possible that further watercourse crossings, not shown on OS mapping or encountered during the site visit, could be identified at a later stage. If the Proposed Development is granted consent and additional crossings are identified during construction, they should be promptly surveyed, and details submitted to SEPA to ensure the appropriate crossing design is selected

1.4 Watercourse Crossings

1.4.1 Water crossings visited

Water Crossing 12		
Watercourse Name (As shown on 1:10,000 scale OS mapping): Allt a Chromain Easting: 214418 Northing: 679406 Type of Crossing: Flush Crossing Description: This water crossing is located at the headwaters of Allt a Chromain. A wide are of waterlogged ground was observed with some instances of pooling. There was no distinct channel or embankment visible, instead water collects in this area before flowing downhill to the east. A flush crossing has been considered for this location to avoid any disruption to flow paths or supply into the Allt a Chromain.		
Watercourse Crossing Photographs		
Across	Upstream	Downstream
		

1.4.2 Existing forestry track water crossings

Water crossings two to eight are existing and are part of the constructed forestry access tracks. The tracks along this portion of the access route will require some upgrading which may include widening of some areas.

Satellite imagery shows these crossings to be within forestry and as such, the banksides are heavily vegetated. Given their location within forestry, these crossings will have been constructed in adherence to UK Forestry Standard Guidelines. Prior to construction, these crossing points will be further assessed and a Construction Environmental Management Plan (CEMP) and Pollution Prevention Plan (PPP) will be put in place, adhering to the standards set out by SEPA and Argyll and Bute Council.

The upgraded crossings will be constructed in accordance with standard practice set out in SEPA's Engineering in the water environment: Good Practice Guidance – River Crossings (2010).

1.4.3 Remaining water crossings

Water crossings nine to 11 are tributaries of the Eas a Chailbeil and the Allt a Chromain and are currently located within forestry. These watercourses were assessed using satellite imagery and were observed to be small in scale with dense bankside vegetation and forestry. It is anticipated that these crossing locations will require a standard bottomless arch culvert crossing and will be of a scale that would be registered under the Water Environment (Controlled Activities) (Scotland) Regulations 2011. Following felling, these locations will be surveyed to determine their condition and confirm the most suitable crossing type.

1.5 Summary

The identified crossings are mostly associated with existing forestry tracks with one location exhibiting a flushed area. Each crossing point has been assessed for its physical characteristics, existing modifications, and ecological significance. Recommendations for design and mitigation measures have been provided to ensure that watercourse crossings are constructed in a manner that maintains hydrological connectivity, supports aquatic life, and preserves water quality.

With consideration to the suggested construction techniques, good practice measures, and additional mitigation measures, where applicable, it is anticipated that any potential pollution or adverse affects can be limited to a manageable level. This assessment assumes that any new watercourse crossings installed will be constructed of bottomless arch culvert design, or a flush crossing.

The information presented in this document is intended as a guide. The actual design, construction, and/or improvements to the crossings during construction will be the responsibility of the appointed construction contractor.

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