



# Longcroft Wind Farm

## Technical Appendix 3.3

### Outline Pollution Prevention Plan

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# 1 Introduction

- 1.1.1 This outline Pollution Prevention Plan (PPP) is submitted by the applicant. The principal objective of this document is to provide details of the proposed surface water drainage management arrangements for the proposed development.
- 1.1.2 As the outline PPP is being prepared as part of the planning application, the applicant is yet to appoint a contractor to undertake the civil engineering works. It is proposed that the contractor appointed to construct the proposed development will refine this outline PPP prior to construction to ensure it is fit for purpose.
- 1.1.3 The Figures referenced within the outline PPP have been produced for the Longcroft Wind Farm Environmental Impact Assessment Report (EIAR) and to avoid unnecessary duplication they have not been reproduced in this document but signpost to the relevant location within the EIAR.

# 2 Description of the Site

- 2.1.1 The proposed development is located north-east of the A697, approximately 8.5km north-north-east<sup>1</sup> of Lauder in the Scottish Borders.
- 2.1.2 The extents of the site are indicated on indicated on Figure 1.2.
- 2.1.3 The site is centred on Ordnance Survey grid reference E 355000, N 656000, covers an area of approximately 1,290ha with wind turbines occupying hills locally known as Hogs Law, Hunt Law, Peat Law and Riddel Law. The site is currently used predominately for hunting sport and sheep & cattle grazing.
- 2.1.4 The Whalplaw Burn passes through the centre of the site, which flows into Cleekhimin Burn and onwards into Leader Water, ultimately flowing into the River Tweed. The A68 and A697 pass to the west and south west of the site. To the north and east lie the Lammermuir Hills. The operational wind farm Fallago Wind Farm sits adjacent to the north-east of the site.
- 2.1.5 The proposed development is shown on drawing Figure 1.3.
- 2.1.6 The total construction area for the proposed development is approximately 31.5ha. This allows for a construction footprint around the

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<sup>1</sup> This distance is given to the approximate centre point of the site boundary.

infrastructure and an estimated buffer for spoil placement (temporary and permanent). Where sites are greater than 4ha and discharge water run-off to the water environment The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (CAR) requires a license to be applied for.

- 2.1.7 It is intended that this outline PPP is developed further through provision of detailed plans and calculations for surface water drainage management on the site.

## 2.2 Existing Hydrology

- 2.2.1 There are several artificial drainage features across the site, typical for a site predominately used for agricultural and arboricultural purposes.
- 2.2.2 Surface water within the site appears to drain to Soonhope Burn, Whalplaw Burn and Jock's Burn. All three are upper tributaries of the Leader Water and eventually drain to the River Tweed. Wind turbines T1 , T3 - T5, T13 - T16 & T18 all drain to the Whalplaw Burn, wind turbine T2 drains to Hogs Burn, wind turbines T6 - T12 drain to Jock's Burn and wind turbines T17 & T19 drain to Soonhope Burn.
- 2.2.3 The north of the site is marginally located within the Dye Water Drinking Water Protected Area (DWPA). The DWPA catchment boundary is located upslope of the proposed development, approximately 100m to the nearest infrastructure. Scottish Water in their scoping response advised there to be no drinking water catchments or abstractions that may be affected by the proposed development. As the DWPA is located in a separate catchment and upslope from the proposed development, it is not hydrologically connected.

## 2.3 Existing Geology

### Superficial Geology

- 2.3.1 British Geological Survey (BGS) online mapping indicate that superficial deposits are absent across much of the site. Alluvial deposits flank the numerous watercourses with concentrated areas of glacial till mapped upslope of the watercourses but absent on hill tops. There are some localised areas of peat mapped in the north and east of the site, as shown in Figure 10.2 of the EIAR.

2.3.2 The National Soil Map of Scotland indicates that the soils at the site comprise brown soils to the south of the site, alluvial soils across central areas of the site and peat in the north of the site. BGS GeoIndex Onshore data and mapping indicate that no artificial ground is present within the site.

### Bedrock Geology

2.3.3 The site is shown by BGS online mapping to be mostly underlain by Silurian age sedimentary bedrock of the Gala Group (wacke sandstone, with siltstone and mudstone in variable proportions), as shown in Figure 10.4 of the EIAR.

2.3.4 There are numerous intrusive igneous rocks present across the site, ranging in age from Siluro-Devonian (predominately comprising felsic and granitic rocks) to Carboniferous (mafic rocks).

2.3.5 The start of the proposed access track is underlain by the Silurian-Devonian aged Great Conglomerate Formation. This consists of fine-to coarse-grained conglomerates composed of greywacke pebbles, sandstones, siltstones, and mudstones.

## 3 References, Guidance and Legislative Requirements

### 3.1 References

3.1.1 This document should be read in conjunction with the following documents:

- Longcroft Wind Farm EIAR Volume 1 - Chapter 10 - Geology, Hydrology and Hydrogeology; and
- Longcroft Wind Farm EIAR Volume 3 - Technical Appendix 3.1 Outline Construction Environmental Management Plan.

### 3.2 Relevant Guidance and Legislative Requirements

3.2.1 All surface water drainage management relating to the proposed development will be constructed using best practice and in conformance with the requirements of the relevant regulatory authorities. The key legislation and guidance that will be adhered to, are as follows:

- The EU Water Framework Directive (2000/60/EC).

- Scottish Planning Policy.
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011.
- SEPA Supporting Guidance (WAT-SG-75) Sector Specific Guidance: Construction Sites, Feb 2018.
- SEPA Guidance for Pollution Prevention (GPPs and PPGs).
- Engineering in the Water Environment, Good Practice Guide, Temporary Construction Methods, First Edition, March 2009.
- Good Practice during Wind Farm Construction, A joint publication by Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission Scotland, Version 1, October 2010.
- Highland Renewable Energy Strategy and Planning Guidelines, May 2006.
- Highland Wide Local Development Plan (HwLDP), April 2012.
- The Sustainable Urban Drainage Scottish Working Party (SuDSWP) Water Assessment and Drainage Assessment Guide.
- CIRIA Guidance. C532, C609, C648, C649, C698, X108, C768.
- The SuDS Manual 2015. CIRIA C753.

## 4 Potential Sources of Pollution

4.1.1 The following potential sources of pollution have been identified for the proposed development:

- Suspended solids / fines laden run-off from site won / imported stone for track / hardstand construction.
- Suspended solids / fines laden run-off from exposed excavations.
- Suspended solids / fines laden run-off from excavations in watercourses.
- Fuel / chemical spills.
- Concrete from spills / washouts.
- Foul drainage discharges from temporary and permanent welfare facilities.

4.1.2 The subsequent sections outline how the risk of pollution from the identified pollution sources will be mitigated.

## 5 Pollution Prevention Proposals

### 5.1 Surface Water Drainage Management

5.1.1 A sustainable drainage system (SuDS) will be implemented in accordance with the principles laid out in the Chapter 10 - Hydrology, Hydrogeology and Geology. The overarching aim of the SuDS design is to minimise, where possible, any change to the hydrology and groundwater conditions within the site. The SuDS will utilise a series of surface water drainage management techniques that will mitigate any adverse impact on the hydrology of the site.

5.1.2 Figures 3.8a-d - Typical Drainage Details provides details of the SuDS that will be implemented at the proposed development.

#### Water Quality and Treatment

5.1.3 A surface water treatment system will be implemented for the treatment of surface water run-off from the proposed development during the construction phase prior to flows entering receiving watercourses.

5.1.4 All temporary and permanent SuDS from the proposed development will have a minimum three stages of treatment. A single stage of treatment is considered as any of the following:

- Conveyance through a swale.
- Filtration of water through filter media (e.g. check dam).
- Detention in settlement ponds / behind dam in overland breakout.
- Filtration / settlement across vegetated ground.

5.1.5 Clean water (groundwater, natural overland flows, watercourses, etc.) and dirty water (from tracks, hardstands and cut slopes) will be as far as practicably possible kept separate. Reducing the volume of water entering the surface water treatment system will significantly improve the performance of the treatment. Where appropriate, a cut off swale will be installed to ensure that surface water run-off can be directed around areas of work and consequently reduce volumes of silt laden construction run-off.

#### Prevention

- 5.1.6 Potential causes of pollution will be managed at their source. The following working methods will be adopted to avoid mobilisation of pollutants:
- Areas stripped of vegetation will be kept to a minimum. Stripped vegetation will be reinstated on slopes as soon as possible after removal.
  - Where necessary, biodegradable matting will be utilised on cut slopes to prevent washing of fines into the surface water treatment system.
  - Good quality stone will be used in track and hardstand construction. Construction material will be specified in accordance with the Specification for Highway Works (SHW). SHW compliant material does not permit the use of large quantities of fine material and therefore all material imported to site will not be heavily laden with silt / fines. Regular inspections and testing of material will ensure the construction material is compliant with the SHW.

### Source Control

- 5.1.7 Potential causes of pollution will be controlled at source. Flows from excavations and hardstand areas will discharge into swales. Check dams will be installed in the swales at regular intervals to provide a level of attenuation, reduce water velocity, and promote settlement of suspended solids and silt.

### Buffer Zones

- 5.1.8 Wind turbine centres are located a minimum of 50m from watercourses.
- 5.1.9 A 10m buffer zone will be employed for all main watercourses in accordance with GPP5: Works or maintenance in or near water (2017). Where this is impossible at watercourse crossing locations, works will be in accordance with the relevant guidance outlined in Section 3.2.
- 5.1.10 Washing out of concrete mixer lorries will be strictly controlled and limited to a designated wash area a minimum of 50m away from any watercourse. Where a potential risk is identified of an accidental concrete spillage into a watercourse, cut off swales and diversion dams will be installed to channel potential spillages and run-off water to a suitable collection area. In accordance with GPP5: Works or maintenance in or near water (2017), contaminated water shall not be pumped or allowed to flow into the water environment without treatment. Collected



effluent shall be pumped out and disposed of off-site in compliance with the Waste Management Licensing (Scotland) Regulations 2011. Residual solidified concrete within the containment area would be broken up and disposed of off-site in accordance with the pertinent regulations, prior to reinstatement of the area.

- 5.1.11 Any dewatering from excavations will be via surface silt traps, check dams, and temporary settlement ponds to reduce potential silt entering receiving watercourses.
- 5.1.12 No dewatering or outflows will be permitted within the 10m buffer zones.

### Control of Surface Water Drainage Management Measures

- 5.1.13 All surface water drainage management measures being implemented will be checked regularly and action taken to ensure functionality. Any sign of silt laden water entering a watercourse will be reported immediately to the Construction Site Manager, the source of the silt identified and further remedial measures undertaken.
- 5.1.14 Furthermore, a Water Quality Monitoring Plan will be implemented to provide a management tool to monitor the effectiveness of the surface water drainage management measures in place to protect the water environment.

### Emergency Pollution Procedures

- 5.1.15 The Emergency Pollution Procedure will form part of the management procedures adopted by all construction site personnel.
- 5.1.16 The procedure will remain in place throughout the operational phase of the proposed development.
- 5.1.17 The Construction Site Manager will act as a central point of contact for all identified pollution incidents. The Construction Site Manager will inform the Environmental Clerk of Works (ECoW) as quickly as possible upon discovery of any spill or leak. The ECoW will advise on any other response requirements and contact key emergency contacts as required. SEPA should be notified via the pollution hotline number (0800 80 70 60).

## 6 Controlling Run-off

### 6.1 Flow Control Measures

- 6.1.1 Run-off will be attenuated in swales and settlement ponds. Attenuated flows will be discharged over existing vegetation prior to discharging into receiving watercourses, as per the existing drainage regime for the site.
- 6.1.2 Rate and volume of run-off will be attenuated using settlement ponds receiving flows from newly constructed hardstand areas. Attenuation features will also reduce flow velocities and allow settlement of fines prior to discharge. Flow rates will also be reduced through the integration of swales and check dams.
- 6.1.3 Tracks and hardstand areas are to be constructed from unbound aggregate and are therefore not fully impermeable, thus helping to reduce run-off rates.
- 6.1.4 Cross drains, where required, will be provided with associated sumps and check dams. The under track drainage will provide a means for flows to pass from a swale on the uphill side of the track to the downhill side of the track and would help maintain existing flow patterns.
- 6.1.5 In cases where the tracks run significantly downhill, grips will be constructed in the surface of the tracks to divert any run-off flowing down the track into the swale.
- 6.1.6 Excavated tracks will incorporate swales with check dams to overland breakouts over vegetation.
- 6.1.7 Floating tracks will follow the principles of minimum disturbance of the vegetated layer. Stone / geotextile will be laid directly onto existing vegetation. No swales will be constructed alongside floating track, water will run-off directly off track onto existing vegetation. Flow balancing pipes, in the form of perforated pipes will be provided at existing flush locations and at regular intervals along the sections of floating track.

### 6.2 Preserving Site Hydrology

- 6.2.1 Existing overland flow routes and channels will be maintained. Piped drainage will be provided under the tracks at all locations where existing natural flow paths pass through the proposed track alignment. Buried

cable trenches would also be designed in a way to avoid modifying shallow flow patterns.

## 7 Watercourse Crossings

- 7.1.1 The proposed development requires one new watercourse crossing and one upgraded water crossing.
- 7.1.2 Consent will be obtained from SEPA under (CAR) for the new or upgraded watercourse crossings. Watercourse crossings have been identified on Figure 1.3. A typical watercourse crossing detail has been provided in Figure 3.9 and an indicative Whalplaw Burn crossing has been provided in Figure 3.10.
- 7.1.3 All works to watercourses will be carried out in accordance with CAR.

## 8 Foul Drainage / Treated Discharges

- 8.1.1 Disposal of sewage from temporary and permanent facilities on the site will be designed and shall be in accordance with the methods outlined in *GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer*, and treatment systems will be sized in accordance with *British Water Code of Practice - Flows & Loads*.

### 8.2 Permanent Sewage Treatment Systems

- 8.2.1 At the substation compound, permanent welfare facilities will comprise of toilets and sinks.
- 8.2.2 The preferred option for sewage treatment is via a septic tank with the treated wastewater to then discharge to a soakaway.
- 8.2.3 Infiltration tests will be carried out to confirm the infiltration properties of the existing ground in the vicinity of the substation compound.
- 8.2.4 Consents will be sought from SEPA prior to the installation of any sewage treatment system.

### 8.3 Temporary Treatment Systems

- 8.3.1 At the temporary construction compound, temporary welfare facilities will comprise of toilets and sinks. Temporary sewage treatment system will be

installed to discharge flows into a temporary cess pit. Off-site disposal from temporary cess pits will be by a licensed waste haulier / contractor.

- 8.3.2 The temporary sewage treatment system will be removed on completion of construction of the proposed development.

## 9 Post Construction Monitoring

- 9.1.1 A post construction inspection programme will be implemented, with a walk over site visit to be undertaken on an ongoing 6-monthly basis (winter and summer preferably). Points to be considered during these inspections include, but are not limited to, the following:
- Check dams and settlement ponds will be checked twice yearly on an ongoing basis. Where stone check dams have become clogged with silt, the check dam will be cleared out.
  - Further check dams will be installed within the swales along any steeper sections of the track.
  - Should there be noticeable effects of erosion at discharge points, suitable erosion protection measures such as reno-mattress or placement of large stones (>150mm) to dissipate water energy levels will be installed at the area affected.
  - Any materials excavated should be placed in such a manner that any instability of excavated materials will not cause further infilling of a swale or drainage feature.
  - Inlets and outlets of cross drains are to be free from silt and debris. All litter will be removed from discharge points / outlets and inlets / outlets of storage features to be operating correctly.
  - A maintenance record log will be maintained for all maintenance work carried out. Where problems persist on each six-monthly inspection, advice will be sought from a SuDS designer on an alternative drainage solution shall be installed.