Outline Construction and Environmental Management Plan

Scoop Hill Community Wind Farm

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Appendix C – Pollution Prevention Plan – Indicative Drainage Layout (To be completed post-consent)

1 Introduction

1.1 Background Information

1.1.1 Community Windpower Ltd (CWL) has applied for S36 planning consent for Scoop Hill Community Wind Farm. The wind farm is located approximately 5 km south east of Moffat and 11 km north east of Lockerbie as shown in Figures 1. These distances are calculated to the nearest turbine. The central point of the wind farm is NY155985. The proposed wind farm will cover an area of around 5,685 hectares (ha), with a total permanent land take within the development boundary of 63ha.

1.1.2 The Applicant proposes to design, install, operate, and decommission a wind farm comprising 75 wind turbines. The site layout is depicted in Figure 2.

1.1.3 In addition to the proposed 75 turbines the project will consist of the following infrastructure:

- Crane hardstands;
- 65km of new on-site access tracks and the utilisation of 40km of existing tracks;
- One primary substation/control room building and compound;
- Three satellite substation/control room building and compound;
- Underground electrical and fibre optical cables to each turbine;
- Three 125 m meteorological masts;
- Up to three energy storage facilities (to be built where the temporary substation construction compound and temporary construction compounds were situated);
- Scottish Power onsite substation and connection to a grid supply point (which will be dealt with via a separate Section 37 planning application).

1.1.4 In addition to this, the following will be required during the construction of the wind farm:

- Up to 8 temporary borrow pits and the expansion of 6 existing quarries/borrow pits, with associated temporary screening or crushing plant, which will be reinstated post-construction;
- Temporary substation construction compounds;
- Temporary construction and storage compounds which will be removed post-construction; and
- A temporary concrete batching plant which may be located in one or more of the excavated borrow pits or construction compounds and moved between.

1.1.5 This **Outline Construction and Environmental Management Plan** (OCEMP) covers general and site-specific details of all envisaged on-site construction works, post-construction reinstatement, drainage and mitigation, together with details of their timetabling. The scope of this document is based on previous experience and further details will be included once planning permission is gained.

1.2 Key Contents

1.2.1 The CEMP includes;

a. A site waste management plan (dealing with all aspects of waste produced during the construction period other than peat), including details of contingency planning in the event of accidental release of materials which could cause harm to the environment;
b. Details of the formation of the construction compound, welfare facilities, any areas of hardstanding, turning areas, internal access tracks, car parking, material stockpiles, oil storage, lighting columns, and any construction compound boundary fencing;
c. A dust management plan;
d. Details of measures to be taken to prevent loose or deleterious material being deposited on the local road network including wheel cleaning and lorry sheeting facilities, and measures to clean the site entrances and the adjacent local road network;
e. A pollution prevention and control method statement, including arrangements for the storage of oil and fuel on the site;
f. Soil storage and management;
g. A drainage management strategy, demonstrating how all surface and wastewater arising during and after development will be managed and prevented from polluting any watercourses or sources and to minimise changes to the hydrological environment;
h. Sewage disposal and treatment;
i. Temporary site illumination;
j. The method of construction of the crane pads;
k. The method of construction of the turbine foundations;
l. The method of construction of tracks.
m. The method of working cable trenches;
n. The method of construction and erection of the wind turbines and meteorological masts;
o. Details of any watercourse crossings;
p. Post-construction restoration/reinstatement of the working areas not required during the operation of the development, including construction access tracks, borrow pits, construction compound and other construction areas. Wherever possible, reinstatement is to be achieved by the careful use of turfs removed prior to construction works. Details should include all seed mixes to be used for the reinstatement of vegetation;
q. A tree felling and management plan.

1.2.2 The wind farm development will be implemented in accordance with the approved CEMP following further consultation with NatureScot and the Scottish Environment Protection Agency (SEPA).

2 Relevant Guidance

2.1.1 This OCEMP has been produced in conjunction with the current best practice methods and guidelines, as listed below:

- Good Practice During Wind Farm Construction – Scottish Renewables (SR), NatureScot, Scottish Environment Protection Agency (SEPA), Forestry Commission Scotland (FCS), Historic Environment Scotland (HES), Marine Scotland Science, AEECoW, 4th Edition 2019;
- Constructed Tracks in the Scottish Uplands, NatureScot, June 2013 (as updated September 2015);
- Floating Roads on Peat, *A Report into Good Practice in Design, Construction and Use of Floating Roads on Peat with particular reference to Wind Farm Developments In Scotland,* NatureScot, FCS, August 2010;

- The SuDS Manual (C753), December 2015.

2.1.2 All construction will be carried out in accordance with SEPA's Pollution Prevention Guidelines and CIRIA guidance and in accordance with the conditions of the Construction Site Licence (Water Use Licence).

3 Overview

3.1.1 This document provides details of the proposed construction methods which will be used during the construction of Scoop Hill Community Wind Farm and will assist to mitigate the potential environmental impact of the construction.

3.1.2 The CEMP provides information outlining the infrastructure to be used for this project. It also outlines the procedures which will be put in place to avoid, minimise and control any environmental impacts which may arise during the construction of the wind farm.

3.1.3 CWL will manage the construction of the project and will be assisted by an Ecological Clerk of Works (ECoW) and the Contractor's environmental engineer who will have their own team including a competent health and safety advisor.

4 Wind Farm Infrastructure

4.1 Introduction

4.1.1 In accordance with relevant guidance the following will be taken into account during the construction of the wind farm, with specific measures detailed below:

- Minimising excavation of material;
- The possible effect on the water table;
- The possible effect of drainage on the type of vegetation;
- How to deal with silty water within the excavated areas;
- How the soil stripping should be carried out; and
- How excavated material should be stored temporarily or reused.

4.2 Construction and Storage Compound

4.2.1 One main construction and storage compound, as detailed in Figure 5, plus three other satellite welfare and storage compounds, as shown on Figure 2, will be required to provide site offices, stores, and welfare facilities for the on-site construction workers and contractors. There may be a requirement for further welfare facilities around the site area, however these would be sited on or near existing or proposed tracks, hardstand or other created areas. These extra facilities will be determined by current Health and Safety advice or guidelines.

4.2.2 The main construction and storage compounds will be fenced using temporary Heras style fencing typically less than 1.8m in height and removed at the end of the construction period. All compounds will be designed and built by the appointed Contractor and will be sized to accommodate the construction and welfare activities of all contractors, including the site-specific requirements of the turbine supplier.

4.2.3 All offices, stores and welfare facilities will be serviced with lighting and electricity provided by a diesel generator.

4.2.4 Part of the main compound area will also be used for staff and visitor car parking for the duration of the construction period; this will be clearly defined by the Contractor.

4.2.5 Diesel or fuel stored at the site compound or moved around site shall be done so in a bunded or double skinned container, fuel bowser or specific bunded trailer. The bund shall have a capacity of at least 110% of the capacity of the tank. All vehicles will only be filled from a bunded trailer, tank or visiting refuelling vehicle. All operations will be in accordance with the refuelling protocol.

4.2.6 Waste collected at the site compound will be segregated and stored in line with the Site Waste Management details – see Section 9 of this report.

4.2.7 To construct the construction compounds, a suitable clean water cut-off drainage system will first be excavated and constructed uphill from the compound area.

4.2.8 The vegetation layer/turves and organic soil with seedbank within the area of the construction compound will be stripped and stored in a suitable location adjacent to the working area, separate from any subsoil excavated. The storage piles shall be no greater than 2.0 m in height to prevent overheating and damage to the turves/seed bank. Turves shall be stored for as short amount of time as possible and vegetation side up. This will ensure it does not significantly degrade during the construction phase.

4.2.9 Suitable stone will be laid and rolled in layers to form the construction compound, paying particular attention to the percentage of fines within the stone. The final surface shall be rolled ready to receive the various offices and welfare cabins. A suitable dirty water drainage system will be established on the lower side of the compound to collect and treat silty water run-off form the compound area. There may be a requirement to introduce either a geo-grid or geotextile matting to improve the bearing capacity of the hardstand area; this will be introduced at the direction of the Contractor or Engineer.

4.2.10 At the end of the construction phase, the equipment/compound units will be removed from site and the compound areas will be reinstated to their pre-construction state in line with the site decommissioning and aftercare plan. However, if the area is to be used for the Energy Storage facility then the area would remain as construction to facilitate this use.

4.2.11 This reinstatement will typically comprise of soiling and using the previously stripped organic soil. The ECoW will be responsible for deciding whether reseeding is the best reinstatement at this location. The ECoW will select appropriate seed-mixes, in agreement with the Local Authority.

4.3 Access Tracks

4.3.1 A network of access tracks on site is required in order to enable easy and safe access to deliver, install and maintain the turbines, which comprises a mixture of existing forestry tracks (40%) and construction of new access tracks (60%). Construction techniques for the new access tracks are provided below.

4.4 Access Track Construction

4.4.1 Based on site/ground investigations, including peat depth surveys and site walkovers, it has been identified that there is peat present on the site. Full details of this are available in the Peat Management Plan in the EIAR in Section 10: Hydrology, Geology and Hydrogeology, Technical Appendix 10.3.

4.4.2 There are varying depths of peat/organic soil across the site however the majority of the development has minimal to no peat, with an average peat depth of 0.41m. It is therefore anticipated that there will be a targeted usage of a 'floating' method of construction, will be utilised on areas where peat depths exceed 0.5m. This method of construction is particularly suited to the undulating topography of the site. There will also be sections of track construction that employs a 'cut' method of construction; however, this would be limited and reduced in preference to floating road construction. Both types of construction are shown in Figure 3a.

4.4.3 Typically, 'floating' track construction shall be used where peat exceeds approximately 500mm (0.5m) in depth and to even out the general topographic depressions and avoid increased or additional excavation.

4.4.4 It is anticipated that the stone material for the construction of the access tracks will be obtained from on-site borrow pits (new and existing). However, it may be necessary to import additional stone for the sub-base and surface or wearing course of the tracks should the site won material not be of suitable quality or quantity.

4.5 Cut Track Construction Method

4.5.1 Cut tracks will be constructed using the following methodology:

- The vegetation/turves will be cut and stored. Where possible the turves should be stored vegetation side up, which will assist restoration. The organic soil will be stored in separate mounds close to the point of excavation in piles not exceeding 2.0 m in height to ensure that it does not dry out and is suitable to be used in reinstatement;
- The subsoil will be excavated until a competent formation layer is encountered and stored close to the point of excavation so it can be later used to dress the track edges;
- The cut section will be constructed using suitable material won from the on-site borrow pits. The material is to be placed in layers (depths determined by the Contractor's engineers on site) and each layer will be fully compacted. A final capping layer with a smaller particle size will then be added and compacted to provide a suitable road profile and running surface, however this may not be added until the main construction works have taken place;
- The track surface will be cambered or provided with a crossfall to shed the surface water into adjacent drainage channels and shall be maintained during the construction period in order to prevent deterioration of the running surface. Typically, the drainage channel would be approximately 500 mm deep and close to the edge of the track with tapered sides; and
- Existing drainage patterns will be maintained wherever possible by installing cross drains beneath the cut track. Cross drains will be installed with stone headwalls which will control the flow of water and prevent erosion of the channels. The Contractor will

determine the frequency and capacity of these culverts and monitor their effectiveness.

4.6 Cut Track Edge Reinstatement Method

4.6.1 The Contractor shall provide construction details of the track construction reinstatement for approval, which shall include where necessary:

- The reinstated soil areas will then be topped with the excavated turves, with areas also being re-seeded if necessary. The construction should be sequenced such that the time that the turves are stored is minimised.
- Soils and turves will be stored adjacent to tracks, turbine bases, the compound etc. and used in the re-instatement works for each of these structures. They will be stored in a manner that minimises run off and pollution. Height will not exceed 2m.

4.7 Floating Track Construction Method

4.7.1 Floating tracks will be constructed using the following methodology:

- A separation geotextile membrane layer may be rolled out directly on the vegetation layer and layers of geogrid shall be laid over graded and compacted borrow pit aggregate to form the floating track; the size/type and use of the geotextile and geogrid will be determined by the Contractor's engineers on site;
- Construction of the track using suitable material won from the on-site borrow pits will be placed in layers (depths determined by the Contractor's engineers on site) and fully compacted using a vibrating roller. It may also be necessary to add an intermediate layer of geotextile or geogrid, which will be determined by the Contractor's engineers on site. A final capping layer with a smaller particle size will then be added and compacted to provide a suitable road profile and running surface, however this may not be added until all the main construction works have taken place;
- The track surface will be cambered or provided with a crossfall to shed surface water and shall be maintained during the construction period in order to prevent deterioration of the running surface and excessive erosion;
- Existing drainage patterns will be maintained wherever possible by installing cross drains beneath the floating track. Cross drains will be installed with stone headwalls and control the flow of water and prevent erosion in the channels. The Contractor will determine the frequency and capacity of these culverts and monitor their effectiveness. On tracks built on a sloping surface it may be necessary to construct intercepting cut-off ditches if rapid clean surface water run-off down a slope is anticipated.

4.8 Floating Track Edge Reinstatement Method

4.8.1 The Contractor shall provide construction details of the track construction reinstatement for approval, which shall include where necessary:

- The subsoil from nearby near excavations will be used to form batters along the sides of the tracks to support vegetation where no drainage channel exists. Any soil material not required in track reinstatement shall be used in the borrow pit areas;

- The reinstated soil areas will then be topped with the excavated turves, with areas also being re-seeded if necessary. The construction will be sequenced such that the time that the turves are stored is minimised;
- Soils and turves will be stored adjacent to tracks, turbine bases, the compound etc. and used in the re-instatement works for each of these structures. They will be stored in a manner that minimises run off and pollution. Height will not exceed 2m; and
- When re-instating track verges, turbine bases etc, soil will not be spread deeper than 2m or wider than 5m.

4.9 Method of Defining Track Route

4.9.1 The location of the access tracks has primarily been determined by the topography of the site and to avoid sensitive habitats, with existing forestry tracks wherever possible. This design has been further developed and improved following topographical surveys of the area to ensure the necessary gradients can be achieved with minimal excavation or infill.

4.9.2 Prior to the actual track construction, the Contractor will 'set-out' the proposed route in suitable sections, typically 500m-1000m in length, in conjunction with the ECoW, to ensure that suitable track construction methods are employed and that the proposed drainage routes are appropriate.

4.9.3 The micro-siting allowance of 100m will allow a degree of flexibility to take in to account localised topography, ground conditions, peat and habitat, to ensure that the most appropriate route is constructed by the Contractor. This micro-siting will be overseen and approved by the ECoW.

4.10 Verge Reinstatement

4.10.1 Following the access track construction (floating or cut methods), reinstatement of the verges may be necessary. The previously stripped soil and turves will be utilised for the verge reinstatement.

4.10.2 The turves will be reintroduced as soon as possible to allow vegetation to recover swiftly and this would tie in with the edge reinstatement as proposed.

4.10.3 Where possible, the verge will be reinstated to form a smooth transition of ground levels between new and existing areas.

4.11 Crane Hardstands

4.11.1 At each turbine location, a crane hardstand will be constructed to facilitate the erection of the turbine components. The hardstands will be constructed in accordance with the site-specific requirements of the turbine supplier and shall be sized to accommodate the erection crane and (smaller) secondary crane required to ensure safe installation of the turbine.

4.11.2 The hardstands will be constructed using site-won stone and will be constructed from a firm excavated foundation and generally utilise a 'cut' design rather than a 'floating' design in order to ensure that the requisite plate bearing capacity is achieved.

4.11.3 Typical crane hardstand dimensions are depicted in Figure 4; however final dimensions will be confirmed by the turbine supplier. Prior to the excavation of the crane hardstands, all

vegetation/turves and any underlying organic soil will be stripped. The turves and organic soils will be stored separately next to the crane hardstands for use in re-instatement and banking around the area.

4.11.4 The subsoil will be excavated until a competent formation layer is encountered and stored separately close to the point of excavation so it can be later used to dress the crane hardstand or track edges or side.

4.11.5 The crane hardstand will be constructed using suitable material won from the on-site borrow pits. The material is to be laid in layers (depths determined by the Contractor's engineers on site) and each layer will be fully compacted. It may be necessary to add a layer of geogrid, however this will be determined by the Contractor's engineer.

4.11.6 A capping layer of site-won stone with a smaller particle size will then be added and compacted to provide a suitable profile and operational surface. This final layer will be tested to ensure adequate bearing capacity is achieved. This final layer may be added after the main construction works are completed.

4.11.7 The edges of the exposed crane hardstands will be soiled using stored soil and dressed with organic soil which contains a natural seed bank to provide greening of the area and hence reduce their visual impact. Hardstand working surfaces will not be reinstated as part of the construction work so that they remain fit-for-purpose should they need to be used, for example for turbine component replacement.

4.11.8 Suitable drainage will be formed around the hardstand, if required, taking in to account the slight gradient required for the hardstand and crane operation.

4.12 Turbine Foundations

4.12.1 The turbine foundations will be designed by a qualified structural consulting engineer, following a more detailed assessment of the on-site conditions and the final selection of the turbine supplier and turbine model.

4.12.2 Ground investigation work at the individual turbine locations will allow structural engineers to identify a suitable turbine foundation construction method.

4.12.3 There are various turbine foundation types, however it is anticipated that all foundations will be gravity foundations where good bearing strata is available throughout the site. Where conditions prevent gravity foundations, piled foundations will present an alternative option.

4.12.4 Any 100m micro-siting of turbines shall not encroach on the 50 metre buffer to watercourses. Control of micro-siting will remain with CWL and any micro-siting will be permitted only with the express and considered permission of the ECoW.

4.12.5 The construction method for the turbine foundations will typically be as follows:

- The vegetation/turves, organic soil and subsoils will be stripped and temporarily stored in separate bunds adjacent to the turbine excavation to be used for reinstatement;
- The minimum area required to receive the turbine foundation will be excavated to a suitable formation, approved by the Engineer; should suitable well-graded material

be obtained from the excavation, this will be retained to be used as backfill and placed above the reinforced concrete foundation;

- The footprint of the foundation will receive typically 100 mm thickness of blinding concrete. Ducts will be installed below and through the turbine foundation to allow cables to be installed into the turbine;
- The turbine bolt structure or cage will be installed at the centre of the foundation. Steel reinforcement and formwork will then be assembled around this and concrete poured to form the in-situ reinforced concrete foundation. The concrete pour may be completed in two sections depending upon the final design of the concrete foundation;
- During the concrete pour, cube samples of concrete will be taken so that the overall concrete can be tested for strength and quality;
- The concrete will require a period of up to 4 weeks to cure before turbine erection can take place;
- Earthing cables will be installed around the perimeter of the turbine foundation in accordance with the design. The foundation will be backfilled using the stockpiled material and fully compacted, followed by reinstatement of the relevant part with soil and turves;
- If there is any groundwater seepage into turbine excavations, then there may be a need to dewater. A 'permit to pump' system will be put in place.

4.13 Turbine Installation

4.13.1 The turbines are manufactured in separate components and installation is completed in sections.

4.13.2 Turbines will be installed from the hardstand area located at the base of each turbine location using a suitable crane.

4.13.3 Turbine installation commences with the initial lower tower section, connected to the turbine foundation using the turbine bolt structure or cage.

4.13.4 The tower of a single turbine is made up of multiple tower sections, each of these sections is installed separately and bolted sequentially to the previous lower section.

4.13.5 Following installation of all the tower sections, the nacelle is lifted to the top of the tower and secured, the nacelle contains the electrical generator and other electrical components.

4.13.6 The hub and blades are then fixed to the nacelle.

4.13.7 Once the installation of the turbine components is complete, the electrical and mechanical commissioning of each turbine can take place and the turbine be connected to the HV electrical array, completing its installation.

4.14 Cable Trenches

4.14.1 Cables trenches will generally follow the line of the access tracks from the substation compound to the individual turbine locations. The proposed cable trenches vary in width, (typically 400 mm and 1200 mm) to allow for difference cables numbers and types and are excavated to a to a depth of around 1200mm. This allows a depth of cover to the cables to be in the order of 1m. This is shown in Figure 3a.

4.14.2 Where practical, trenches shall be dug on the downhill slope adjacent to the access tracks. All track crossings shall be ducted to protect the cable, and these ducts further protected by concrete. Marker posts shall delineate the track crossings and where the cable trenches change direction.

4.14.3 The construction methodology to be adopted in the cable trenching is as follows:

- Vegetation/turves stripped from route of proposed cable access route will be stored in separate bunds adjacent to route;
- Organic and sub soils will then be excavated to the required depth for installation of cables. These soils shall be stored adjacent to trench separate from the vegetation turves;
- Sand or other suitable material will be placed as cable bedding. HV cables will be laid on this bed. Further sand protection will be placed together with warning tiles/tape;
- The trench will be carefully backfilled using as dug material, avoiding any large angular materials, with the communication cables and earthing grid/cables installed in the upper part of trench together with further sand protection and warning tiles/tapes; The cable trench shall generally only remain open for a maximum period of 4 days, to avoid washing out the bedding material;
- To avoid the cable trench acting as a conduit for water, clay plugs and/or impermeable barriers may be put in place to block water flow on slopes, as recommended in 'Good Practice during Wind Farm Construction' guide;
- Digging of trenches during heavy rain will be avoided;
- The existing hydrological pathways will be maintained by the careful use of suitable materials for the cables surround and backfill. In that way the constructed cable trench will not act as a drainage path;
- The trench shall be backfilled to a level to match adjacent ground levels and the soil and vegetation turves placed on the backfilled trench;
- Excess materials shall be removed from the route of the cable trench;
- Electricity marker posts shall be placed at appropriate locations to record the route of the HV cables; and
- Where appropriate seeding using an approved seed mix shall be carried out in areas where natural seeding has not taken.

4.15 Substation/Satellite Substations/Control Room Buildings and Compounds

4.15.1 Substation/control room buildings will be constructed on the site to allow processing of the electricity produced. This facility will be of a type approved by Scottish Power and will contain welfare facilities adequate for operatives. The treatment of sewage and wastewater will be in accordance with regulations and all permissions will be sought for any such treatment and disposal. The building is housed with a fenced compound for Security and Health and Safety reasons, given the nature of the equipment within.

4.16 Permanent Meteorological Masts

4.16.1 Three 125m meteorological masts will be required as part of the wind farm infrastructure.

4.16.2 The masts will be a lightweight tower made of galvanized steel welded together in a lattice arrangement. The mast will have circular hollow section legs and solid round bracings and may

either be free-standing or guyed depending upon the final design selected. The position of the meteorological masts are shown in Figure 2.

4.16.3 The mast foundations will be a reinforced concrete, gravity base and will be constructed by the Contractor, incorporating the components provided by the mast provider. The size of the foundation will be determined by analysis of the expected loads and will depend on whether the mast is guyed or free-standing.

4.16.4 If the mast is guyed, anchor points will be installed by excavating to a suitable rock anchor, or by excavating sufficient area to bury a dead-man anchor usually made of timber. Anchors are then backfilled and secured with just the anchor eye protruding from the ground to for attaching the guy wires.

4.16.5 Pull tests will be carried out on the anchors, before installation of the guys, to ensure that they can withstand the required loading.

4.16.6 The foundation and anchor points will usually be constructed in advance of the met mast installation team mobilising to site.

4.16.7 The mast itself will be delivered to site in modular sections and will be installed by crawler crane or self-building derrick system.

4.16.8 Meteorological Instrumentation is installed on booms, with cable securely tied to the mast lattice. The instrumentation connects to a datalogger which is usually connected into the wind farm SCADA system. The logger and cable terminations will be installed in a secure enclosure.

4.16.9 The relevant statutory inspections and safe-to-climb certifications are completed and included in an installation report. The mast is inspected by the employer prior to it being handed over.

5 Borrow Pits

5.1 Introduction

5.1.1 For the construction of new on-site access tracks, locally won stone material will be required. Up to eight borrow pit locations are intended to be opened with a further six existing borrow pits being re-opened on the Scoop Hill Community Wind Farm site. The proposed borrow pit locations are shown in Figure 2.

5.1.2 A full borrow pit assessment can be found in Appendix 2.3 of Section 2.

5.2 Borrow Pit Establishment

5.2.1 Geotechnical surveys will assess the borrow pit locations in order to determine the extent and suitability of material available for extraction.

5.2.2 The results of the survey will further inform the detailed specifications of the borrow pits. However, typically the borrow pits will each be a maximum of 10,000m^2 and a maximum depth of approximately 8m.

5.2.3 A planning condition for a Borrow Pit Site Management Plan, will be attached to the planning permission. The management plan will be subject SEPA approval prior to the opening of any borrow pits.

5.2.4 Prior to opening a borrow pit, if required, the area will be inspected by the ECoW for ground nesting birds. Once ECoW permission is given, cut off drains will be excavated to redirect surface water around the borrow pit area. The land will be stripped of vegetation and turves and this will be stored at the perimeter of the borrow pit in mounds no higher than 2 metres. The organic soil below will then be stripped and stored for later re-use. Post and wire fencing may be installed to improve safety and minimise risk.

5.2.5 Stone extraction and grading using machinery will then take place to provide the stone necessary for the construction works.

5.3 Borrow Pit Reinstatement

5.3.1 Due to the topography of the site, each borrow pit may have a different restoration objective, which will be confirmed following the site geotechnical investigations, however typically the borrow pit areas will be reinstated in accordance with the following principles:

- Any unsightly areas of rock excavation (for example those which appear as spoil heaps or obviously man-made excavations with straight edges) and areas likely to encourage erosion would be graded to more gentle profiles that are appropriate with the existing natural topography;
- The slopes and floors of borrow pits will be shaped to best-fit local contours and will be used to establish semi-natural habitats, including shallow pools;
- Any excess subsoil material from elsewhere on site would be used to backfill and contour areas of the borrow pits. If required, materials used for the reinstatement shall be agreed in advance with SEPA to ensure compliance with waste management;
- The fill material will be placed so as to cover unsightly areas and provide reshaping of the borrow pits to form stable profiles (unlikely to erode or slump), similar to the existing natural landform and allow the natural regeneration of the vegetation;
- This plan for the borrow pit reinstatement will be agreed with the ECoW, and the works itself would be overseen by the ECoW;
- The external edges of the borrow pits will be re-profiled and graded to a gentler profile, at a gradient of around 1 in 3. The final slope gradient will be dependent upon the materials available but is unlikely to be greater than 45 degrees;
- Backfilled areas, if required, will be lightly compacted to remove air pockets. Organic soil and vegetated turves set aside from the borrow pit stripping will be used to reinstate the borrow pit upper surface;

5.3.2 The ECoW will review the reinstatement works and instruct whether seed mix is to be applied to accelerate vegetation growth. Any seed mix would be agreed between the ECoW and the relevant authority.

6 Excavated Materials

6.1.1 Efforts will be made to minimise excavations as far as is practical and feasible within the engineering and environmental constraints of the wind farm construction.

6.1.2 All construction works involving excavation of rock and soils will be flexible and adaptable to take account of changing conditions, particularly in relation to weather and ground conditions that may be encountered during the works. Ground disturbing activities will be restricted

during periods of heavy rainfall and weather forecast information will be utilised to plan the timing of excavation work.

6.1.3 Excavated rock and soils should be kept separate to avoid where possible cross contamination of distinct horizons. Organic soils will be used to reinstate the areas where they were removed.

6.1.4 Turves will be stripped and handled with care such that damage to the living vegetation mat is prevented or minimised as far as possible. Turves will be stored separately to soil and used in the re-instatement works.

6.1.5 Stripped materials will be stored in appropriately designed and clearly defined separate piles.

6.1.6 Soils and turves will be stored adjacent to tracks, turbine bases, the compound etc. and used in the re-instatement works for each of these structures. They will be stored in a manner that minimises run off and pollution. Height will not exceed 2m.

6.1.7 When re-instating track verges, turbine bases etc, soil will not be spread deeper than 2m.

6.1.8 Excess stone and soils will be used in the re-instatement of the borrow pits.

6.1.9 Stockpiles will be sited a minimum of 50m from watercourses, ditches and drains. Soils will be stored to minimise run off of soil. Sides will be battered to prevent erosion from rainwater and the height will not exceed 2 metres.

6.1.10 Cut off drains and silt nets may be required for run off from stockpiles.

6.1.11 If soil is drying out, stockpiles will be damped down to reduce dust.

6.1.12 In order to reduce the need for temporary storage, reinstatement of soils and turves around infrastructure, and in restoration and landscaping works on areas of excavated/disturbed ground, will be carried out during the construction phase or as soon as is practical after the completion of the works in any one area of the site.

6.1.13 To minimise handling and haulage distances, where possible excavated material will be stored local to the site of excavation and/or local to the end–use site where it is required for re-profiling and landscaping purposes. These locations will be decided upon following consultation with the appointed ECoW with sensitive habitats and species in mind as well as considering potential risks from material instability and run off into watercourses.

6.1.14 Where material is stockpiled, excess consolidation will be avoided and material will be placed on level ground.

6.1.15 Prior to any excavations taking place, hydrology shall be considered to minimise the disturbance as much as is possible. In order to achieve this, the following objectives have been followed during the design of the wind farm:

- Minimising the construction footprint and ground/habitat disturbance;
- Restoring vegetation and habitats as early as possible;
- Minimising disruption to major hydrological flow paths; and
- Reducing run off from exposed areas.

7 Pollution Prevention Plan

7.1 Pollution Prevention Management

7.1.1 During the construction of the wind farm and associated infrastructure, pollution to watercourses could potentially occur as a result of poor planning and implementation of management procedures associated with plant and materials handling, waste management, surface water and drainage management, and concrete management. Rigorous pollution prevention measures will be put in place to avoid and mitigate and such pollution.

7.1.2 Planning for pollution prevention on site will follow the Source-Pathway-Receptor model with these features identified and taken into account during the construction period.

7.1.3 A Construction Site Licence will be sought from the Scottish Environment Protection Agency (SEPA). CWL will apply for the licence and provide with the application an assessment of the likely measures that will be needed to prevent pollution prevention. Due account is taken of topography, vegetation, soil looseness, existing watercourses both manmade and natural and suitable points for discharge. This plan will demonstrate that full pollution prevention measures are feasible within the red line boundary of the site. The plan will be drawn up in full consultation with the ECoW.

7.1.4 A full Pollution Prevention Plan will be developed in full consultation with the ECoW and SEPA.

7.1.5 The Construction Site License will be transferred to the Contractor upon his appointment and the Contractor will add the full detail to the PPP to include full details of contingency planning and emergency procedures in case of accidental release of harmful materials.

7.1.6 This licence and responsibility will be transferred back to CWL and will be in place until SEPA is satisfied that pollution risk no longer exists. Each Licence holder will provide to SEPA its own contingency planning and emergency plan, plus any developments of the further phases of the pollution prevention plan.

7.1.7 The Contract documents for the civils Contractor will ensure that the Contractor accepts transfer of the Construction Site licence and that it will be in a position to fully function as the Licence holder during the construction period in preventing pollution.

7.1.8 The Civil Contractor will be responsible for pollution prevention for the duration of the contract and until such time as permanent measures, such as permanent drainage and silt mitigation controls, are deemed to be adequate and appropriately constructed to the specifications stated within the Contract. This will be overseen by the ECoW.

7.1.9 This responsibility will extend to the actions of any third party who is sub-contracted or otherwise involved in the project.

7.1.10 It will be the responsibility of the Contractor to contact SEPA, NatureScot, other statutory and non-statutory bodies (e.g. RSPB, riparian landowners, fishery and angling concerns etc.) in the vicinity of and downstream of the proposed project so that the requirements and interests of these parties are adhered to and protected throughout the duration of the Contract.

7.1.11 The Contractor will be responsible for obtaining all necessary consents, licenses and permissions for his activities as required by current legislation governing the protection of the environment.

7.1.12 Upon completion of the Civils work and takeover of the site by the Turbine Supplier, the License will be transferred back to CWL. CWL will then operate the site and control contractors and visitors to ensure that pollution risk is avoided and that an emergency response system and resources are in place to manage the site.

7.1.13 The ECoW will independently maintain a Pollution Prevention Measures Register (PPMR) in which all mitigation measures put into place will be listed and checked weekly to assess the requirement for maintenance.

7.2 Contractor Requirements

7.2.1 The Contractor will be required to further develop and submit the detailed Pollution Prevention Plan prior to commencement of works. This plan will be a phased document, tailored to suit specific activities or work areas, and be continually reviewed at weekly meetings for the duration of the works.

7.2.2 The detailed Pollution Prevention Plan will include, as a minimum, specific procedures relating to:

- Fuel handling and storage, including the locations of both periodic and regular fuelling points and emergency spill response;
- Concrete wash out areas, including design and locations of the concrete wash out areas, pollution prevention measures, drainage controls;
- Responsibilities and details for monitoring and training in relation to pollution prevention and mitigation measures;
- Regular Inspections at relevant construction areas will take place both the Responsible Person and all employees who will have a duty to report actual pollution, likely sources of pollution and imminent pollution events as part of their ongoing vigilance on site during storm events and at all times; and
- Design, management and mitigation measures for noise, including monitoring of noise at the nearest sensitive receptors (unless covered elsewhere within the Health and Safety File).

7.2.3 The Contractor will be required to create and submit an Emergency Environmental Response plan, which will also be approved by the ECoW. The Emergency Environmental Response Plan will be part of the site induction forms/presentation and all sub-contractors will be up to date with the relevant requirements and emergency environmental procedures.

7.2.4 In addition to the above minimum requirements for the Pollution Prevention Plan, the Contractor is also required to submit a number of other Environmental Plans which deal with specific aspects of pollution prevention. These include detailed:

- Drainage Management Plan,
- Watercourse Crossing Plan; and
- Site Waste Management Plan.

7.2.5 All Pollution Prevention Plans, Emergency Environmental Response Plans, drainage and overall civil works design and other requirements will be subject to detailed due diligence checks by the ECoW and engineers from CWL. This will give the confidence to all parties that overall design will be adequate for the whole project's life cycle and nothing has been under engineered, especially in terms of drainage and pollution prevention approach.

7.3 Potential Pollution Sources

7.3.1 Contaminants associated with the construction of a wind farm may be both chemical (e.g. spilled fuels, oils, lubricants, concrete and concrete constituents, sewage and grey water discharges, surfactants and other cleaning chemicals) as well as physical (e.g. dust and other airborne particulates, siltation and sedimentation of watercourses).

7.3.2 Hydrological conditions on and around the wind farm development can be affected by a number of sources from construction works including:

- Disturbance to banks and bed of watercourses during crossing construction;
- Pumping of standing water for de-watering of excavations;
- Run-off from exposed ground, excavations and material stockpiles, tracks and haul routes;
- Run-off from recently reinstated areas (track verges, borrow pits);
- Landslides;
- Cement and cement wash from concrete wash out areas and where cement is being applied;
- Plant washing and wheel wash areas;
- Fuel and chemical storage areas;
- Leaking plant;
- Sewage and wastewater from construction compound and control building; and
- Cable trench excavation.

7.3.3 Watercourses that have the potential to be polluted are:

- Dryfe Water: The headwaters of the Dryfe Water are located on the southern slopes of Loch Fell (the highest topographical point within the site boundary). The Dryfe Water meanders in a general south to south-westerly direction for approximately 11 km until it exits the site boundary at approximate grid reference NY 17224 94630. The Dryfe Water then follows the outside of the site boundary for approximately 3 km. The Dryfe Water joins the River Annan at grid reference NY 10883, 82097, approximately 14 km southwest of the southern section of the Proposed Development and has a total catchment area of 73.16 km2.
- Wamphray Water: The headwaters of the Wamphray Water are located approximately 3 km upstream of the site boundary at approximate grid reference NT 15936 05716. The watercourse then meanders in a generally south to south-westerly direction for approximately 7 km until it exits the site boundary at approximate grid reference NY 13570 97187. The Wamphray Water joins the River Annan, approximately 4 km southwest of the southern section of the Proposed Development. The Wamphray Water has a total catchment area of 26.26 km2.
- Newbigging Burn: The two main watercourses located within this catchment are the Newbigging Burn and the Coomb Burn. These watercourses join at NY 11132 97379 approximately 150 m north-east of where they join the River Annan. This catchment is significantly smaller than the other catchments discussed with a total size of 4.83 km2.
- Black Esk Reservoir: The eastern side of the site boundary is located adjacent to the drinking water catchment of the Black Esk reservoir, however the Proposed Development falls within the Dryfe Water Catchment and therefore, it is not hydrologically connected to the Reservoir. No Scottish Water drinking water

catchments or water abstraction sources, which are designated as Drinking Water Protected Areas under WFD, were indicated within the site boundary. However, given the proximity of the Proposed Development to the Black Esk catchment, consideration will be given to appropriate mitigation and protection of this bordering drinking water catchment.

7.3.4 An extensive GWDTE survey has been undertaken and full details are found in Technical Appendix 8.2 of the Environmental Impact Assessment Report.

7.4 Proposed Mitigation

7.4.1 Mitigation measures will be put in place to reduce any potential impact upon watercourses including:

- New ground excavation works shall be restricted during heavy rainfall events to minimise creation of sediment-laden surface runoff;
- Excavated areas will not remain exposed for long periods especially when adverse weather is forecasted. Management of works will be done in such way that ground excavations will be just before relevant works on that section;
- The Developer and Contractor shall ensure that appropriate precautions are taken to ensure the protection of watercourses and groundwater against pollution, silting and erosion during watercourse crossing construction operations;
- All excavation for turbines, access tracks and hardstands will be constructed a minimum of 50 m away from any watercourse;
- Dust management mitigation (refer to relevant section below) will include speed limitation on site and watering of road surfaces during prolonged periods of dry weather;
- No water from foundation de-watering operations would be discharged directly into any watercourse. Water will be pumped out and passed through filtration systems to ensure excavated water does not contaminate adjacent watercourses;
- Silty water caused by construction activities will be prevented from entering surface water drains or watercourses by the use of silt fences, check dams, sumps, cut off drains, silt traps and drainage to vegetated areas where appropriate. This will be monitored regularly by the Contractor and ECoW, and these measures will be maintained during and after construction;
- Silty water generated from the site will be allowed to settle as much as possible through drainage mitigation measures. Settling ponds will be in groups with staggered outflows and inflows and of a suitable size. Water will then be channelled into vegetated areas a minimum of 50m from watercourses;
- All silt ponds will fit between the site infrastructure and the 50m watercourse limit and naturally work by gravity. If this proves not possible for some reason, the dirty water can be over pumped to a suitable location, although this will be avoided unless absolutely necessary;
- Track drainage will be required. Clean water will be kept separate from dirty track water and the drainage culverts/drains will be of a sufficient size to accommodate the precipitation and sediment load;
- Check dams will be constructed at regular intervals including cobbles and rocks that can withstand high flows during periods of heavy rainfall and will be constructed adjacent to sumps;

- The spacing of check dams and sumps is dependent on the gradient of the road, the spacing of cross drains and the depth of excavation of the excavated road. Additional silt control measures will be put in place in the trackside ditches adjacent to long steeper sections of road. This may include check dams, silt nets and silt traps;
- Additional measures will be provided if there are high concentrations of silt laden run-off;
- Cable trenches have the potential to lead to polluted run-off, measures will be put in place to ensure to specifically deal with potential problems;
- Any refuelling will be carried out a minimum of 50m away from watercourses; Refuelling will also take place only on access tracks, not on vegetation or bare ground, and always with spill kits in place, all in accordance with the refuelling protocol to be developed with the forestry and civils contactors;
- Chemical storage including fuels will be a minimum of 50m from watercourses and will not take place within the buffer areas of private water supplies. Chemicals and fuel will be stored on an impervious base with a bund that is able to contain at least 110% of the volume and sited to avoid traffic collisions following SEPA Guidance for Pollution Prevention.
- Each electrical transformer will be provided with a suitable bunding or a sump/barrier to provide containment of any oil leakages or failure;
- Site compounds, parking areas and turning areas and vehicle and equipment washing areas are to be sited at least 50m from watercourses;
- Extra care will be taken during the first stages of concrete pouring where water needs to be pumped out from the foundation area, any potential pollution paths to be sealed with shutters, clay plugs/impermeable barriers prior to concrete pouring;
- All waste and stockpiled materials will be stored in designated areas and isolated from any surface drains and a minimum of 50 metres away from watercourses;
- The use of cut-off ditches, silt fences, silt traps and drainage to vegetated areas will be employed as required/appropriate in areas of excavation, exposed soils, stockpiling, dewatering and plant and wheel washing;
- Any stockpiled materials will be stored in designated areas and isolated from any surface drains and at least 50 m away from watercourses;
- Concrete wash out areas will follow Guidance for Pollution Prevention GPP5 and GPP6. They will be of sufficient size will be provided at appropriate locations at least 50m from watercourses, will be lined to prevent seepage to the underlying ground, depths monitored to prevent overflow. Where possible a settlement and re-circulation system for water reuse will be considered for water used in concrete batching and wash out areas. Alternatively, wastewater from wash out areas will be tankered off site. Remaining cement will be taken to waste disposal facilities. These concrete washout facilities will be monitored and maintained;
- Forest drains to the east of the site will require monitoring and possible mitigation to avoid pollution being carried to the watercourses. All works will be carried out in accordance with best practice and will aim to prevent deterioration in the ecological status of surface waters and to avoid compromising the restoration potential of such waters. The CAR Practical Guide, Version 8 will be adhered to;
- In the event of a pollutant spillage on site, the planned emergency procedure will be enacted, the material will be contained (using a natural or manmade absorbent material or commercially available booms) and SEPA notified immediately using the emergency hotline number (0800 80 70 60);

- Visual checks of key watercourse locations will be carried out on a daily basis by the Responsible Person. Sampling of the watercourses will be carried out on a regular basis by the ECoW as described in the Hydrochemistry Plan.

7.5 Dust Suppression

7.5.1 Dust suppression methodology will be applied for the duration of the construction works and to the extent of the site boundary and to other sensitive locations.

7.5.2 Any water required for dust suppression will be obtained from suitable existing water boreholes or watercourses at a rate of less than $10m^3$ per day, allowable under GBR. However, in the unlikely event that a greater amount (more than $10m^3$ per day) is required then the local SEPA office (Dumfries office – 01387 720502) will be contacted and a suitable alternative extraction point will be agreed.

7.5.3 Dust suppression methods will include the following:

- Vehicle speed limit reductions during dry days;
- Stored soil and peat will be battered to reduce wind blow and erosion. There will be no storage within 50m of a watercourse;
- Any aggregates will be stored on a hardstanding area, with suitable windshields and appropriate covering where necessary to minimise wastage and pollution through washout and as dust. They will be aligned in a manner that they do not create a barrier to the prevailing wind;
- Water spraying (damping) over the access tracks with a water bowser when and where required;
- Materials likely to cause a dust problem will not be handled on windy days.

7.6 Schedule of Onsite Mitigation during Construction Works

7.6.1 The following is a suite of options that could be used to mitigate silt pollution whilst works are underway on site. This follows the production of a Pollution Prevention Plan (PPP), and construction must be in complete compliance with this PPP. The following mitigations would be considered, and relevant ones implemented as required by the specific situation and location. These are generally in ascending order of impact, severity of problem, and in descending order of likely usage.

A. Reinstatement works;
B. Sheeting stockpiles of material;
C. Emptying every attenuation pond using pumps to make the full capacity available for the forecast rainfall;
D. Emptying silt traps and silt ponds of silt to allow full capacity;
E. Renewing silt nets;
F. Checking and ensuring all silt nets are well dug-in and staked;
G. Systematic check of all existing pollution prevention measures and repair if necessary;
H. Stopping work that may generate pollution;
I. Identify source of sediment release and divert or contain it to prevent continuing pollution;
J. Placing plastic sheeting over and silt nets at toe of stockpiles if this is the problem;
K. Additional check dam made with a combination of gravels and stones;

L. Placing of straw bales to slow flow and allow natural settlement of silt, only in manmade drainage such as ponds or channels;
M. additional cut-off drains;
N. Using mobile pumps to over pump turbid water to an agreed location which is a more suitable environment away from drainage paths, or to newly dug ponds;
O. Dig new ponds;
P. Pumping out attenuation ponds to increase available capacity to previously agreed and signposted locations away from sensitive areas and to area not connected to watercourses or drains;
Q. Placing of silt mats or floc mats in channels;
R. Deployment of Silt buster devices;
S. Use of flocculant and silt capture channels only if previously approved by SEPA.

8 Drainage and Hydrology

8.1 Drainage Design Principles

8.1.1 In addition to the measures proposed in this CEMP, all the principles outlined in the Environmental Impact Assessment Report (EIAR) are applicable.

8.1.2 Good drainage is vital for new access track construction to control surface runoff, minimise the impact on local hydrology and maintain the quality of the track. Good practice guidelines will be followed in the drainage design and construction.

8.1.3 The drainage will be designed to ensure that clean and dirty water are kept separate.

8.1.4 The overland surface water above any new infrastructure will be diverted away from the new tracks/hardstands/borrow pits/construction compounds using ditches, and directed away from the infrastructure, whilst maintaining existing paths and drainage systems. These 'cut-off' drains will discharge little and often to maintain the existing nature of runoff and to prevent accumulation of energy and siltiness. The cut-offs will discharge to vegetation, through silt nets or stone aprons as deemed necessary by the ECoW.

8.1.5 There may be existing drainage channels and watercourses within the area currently under forest cover. Prior to felling of the trees, the drainage routes will be reviewed and care taken in designing the construction works in the forest to ensure that dirty surface water does not discharge into the existing drainage system without pollution prevention measures being put in place first. Existing drainage paths will be disconnected where necessary to break the Source Path Receptor route.

8.1.6 In the forest area, the preliminary layout will be adjusted to take into account the existing drainage routes and will show routes to be disconnected prior to trees being felled and a drainage survey is undertaken.

8.1.7 The presence, connectivity and significance of roadside drains will be assessed prior to the timber harvesting operation in accordance with UK forestry standards. A suitable plan will be put in place once this assessment is complete and prior to the timber harvesting. This will include disconnecting any key drains to prevent silt pollution of watercourses. This information will be supplied to the Responsible Person to enable satisfactory design of mitigation measures during the wind farm construction works.

8.1.8 During the construction period, any silty water runoff into watercourses will be mitigated and therefore a combination of silt fences, cut off drains, sumps, check dams and drainage to vegetated areas where appropriate will be installed and maintained.

8.1.9 Although the proposed access tracks will be granular material and hence permeable, the site topography means that some steeper gradients may lead to surface water runoff that would need to be attenuated. By constructing attenuation ponds (in groups of three) and silt nets along the track side drainage and at the low points, these flows can be collected, and the sediment allowed to settle out.

8.1.10 If deemed necessary, the ponds would be constructed in advance of the main access track works so that they can also be used as settlement areas for construction runoff from unconsolidated road surfaces and storage of materials. They will be designed in accordance with current Sustainable Drainage best practice to maximise the water quality improvement potential. As such they will incorporate a sediment forebay to allow the precipitation of suspended solids prior to discharge usually overland and ultimately into the existing watercourses. Depth will not exceed 0.5m, edges will be shallow to allow escape by wildlife, and material excavated from the ponds will be compacted around the edge of the pond. Inlets and outlets to ponds should be situated at diagonally opposite corners to maximise settlement time. These should be lined where required and hanging outfalls should be avoided to minimise scour. The final pond in the series of three will have two silt nets in an arc below it.

8.1.11 The design of the attenuation features shall be in accordance with best practice and in particular the SuDS Manual (C753), December 2015.

8.1.12 The drainage measures employed for the borrow pits will comprise cut-off channels at the crest and flanks of the borrow pit excavations. Where the borrow pit base level is lower than the connecting site tracks, the water will be directed to a sump and may be pumped from the base of the pit if necessary, into a series of settlement ponds.

8.1.13 Cut-off drains may be excavated above infrastructure to collect clean run off from the surrounding landscape in order to prevent contaminating clean surface water run-off with track water. Likely locations include the up-gradient side of borrow pits, turbine bases and the compound. This clean water does not require treatment and will be directed towards watercourses without being contaminated by silty run off. Water running off from track drains will be treated separately to remove silt.

8.1.14 On steeper slopes regular cross drains will be installed in tracks.

8.1.15 Water pumped from the borrow pits would be discharged into a settlement lagoon that will be constructed adjacent to the borrow pits to treat surface runoff. All settlement lagoons would be constructed to meet SEPA's requirements.

8.1.16 No settlement ponds or silt traps will be placed within GWDTE habitats. Any pumping of turbine water will be within GB15 and not be discharged directly on to GWDTE but discharged in a manner that allows it to flow back into the hydrological pathway.

8.1.17 Highly dependent GWDTE will be identified and reviewed in detail when the Pollution Prevention Plan is being drafted to ensure that each is properly protected against changes to the water supply patterns around these GWDTE's. Infrastructure will be micro-sited away from these areas wherever possible. Where micro-siting is not possible, mitigation will be

designed and identified in the PPP to the satisfaction of SEPA. This might include floating access tracks and sensitive siting of attenuation ponds and drainage features.

8.1.18 These sensitive GWDTE's will be marked out on site by the ECoW where the civil works might possibly impact on them. Strict controls of works around these GWDTE's will be made with the involvement of the ECoW and the Contactor's Environmental Manager involved and responsible.

8.2 Specific Drainage Design Information

8.2.1 Cross drains will be installed beneath cut tracks to help control the flow of water and prevent erosion of the channels. The principle of limiting volumes and velocity and therefore energy of drained water will be used to reduce siltation and erosion. The frequency of cross drains and outlets will be designed by the Contractor's consulting engineers and will accord with best practice. The drainage will be planned to accommodate the design storm required. Measures to further slowdown the flow may be placed as required, including check dams and measures to encourage early vegetation catching and seeding. The designs will be checked by the ECoW and CWL's engineers, and once constructed the system will be monitored by the Contractor and the ECoW, and adjusted to optimise it and ensure it functions as designed.

Cut Track Construction

8.2.2 The Contractor will ensure that the drainage system serving each length of the access track complies with relevant design guidance by restricting any proposed 'Point discharge' from the catchment area(s) to that of a 1 in 2 Year Greenfield Release during a 1 in 200 Year Critical Storm.

8.2.3 Clean water will be kept separately from dirty water as per detailed plan.

8.2.4 Should this be less than 5.0 litres per second (l/s) then no attenuation is required as it becomes impractical to throttle discharge to less than this figure.

Floating Track Construction

8.2.5 The Contractor shall ensure that the proposed permeability characteristics of this area of the access track post construction, are equivalent or better than before the access track was constructed. Any drainage design shall ensure that should there be run-off from a 1 in 200 Year Critical Storm from the area(s) then this run-off will be attenuated to that of a 1 in 2 Year Greenfield Release.

8.2.6 Clean water will be kept separately from dirty water as per detailed plan.

8.2.7 Should this be less than 5.0 l/s then no attenuation is required as it becomes impractical to throttle discharge to less than this figure.

8.3 Watercourses & Existing Drainage Routes

8.3.1 Watercourses are detailed in the EIAR in Section 10 Hydrology, Geology and Hydrogeology.

8.3.2 A number of new watercourse crossings will be required for the Proposed Development in areas which do not utilise areas of existing track (Technical Appendix 10.1: Water Crossing Assessment). Where possible, utilising existing crossings will minimise the impact of

disturbance on the hydrological environment, however some will need upgrading as detailed in the Watercourse Crossing Report. Monitoring of fish and fish populations within watercourses, particularly salmon and trout, will take place pre-construction, during construction and post-construction.

8.3.3 The number of new watercourse crossings as specified at the time of writing this outline CEMP is 13 and the number of existing watercourse crossings required is 35, of which only 11 will require to be upgraded.

8.3.4 A small amount (0.7km2) of the Proposed Development sits within the catchment of the River Annan, which is susceptible to flooding downstream. Through careful design of the watercourse crossings and the implementation of good management practices such as the management of runoff and drainage from the Proposed Development, it is envisaged that the potential risk of increased flooding to downstream areas can be effectively mitigated. All watercourse crossings in this area will be subject to SEPA approval prior to their installation.

8.3.5 During the construction of the consented development:

a) No work shall be undertaken within a 50 m buffer zone surrounding all watercourses and known functioning drains (except for the required watercourse crossings);
b) Existing drainage routes shall be maintained through sensitive placement of soil heaps and where necessary temporary drains;
c) Silt traps shall be provided on all existing drainage routes affected by site works;
d) Cable trenches shall only be constructed in limited sections to reduce drainage of groundwater and prevent additional drainage routes being created;
e) Cable trenches may be plugged to prevent the creation of new drainage paths;
f) The scheduling of works shall minimise disruption and working within wet weather;
g) Temporary works interception drains shall be constructed to prevent potential contamination of runoff and groundwater;
h) Stockpiling of materials on wet ground and near drainage channels shall not take place, unless agreed with the ECoW;
i) Backfilled trenches shall be re-vegetated; and
j) Temporary silt traps shall be constructed to treat runoff.

8.4 Post Construction

8.4.1 After construction of the wind farm infrastructure, erection of turbines and commissioning, the control of the site will pass to CWL's Operations and Maintenance Team. This team will ensure that all drainage is maintained, cleared and, if necessary, adjusted so that it continues to prevent pollution of the environment. Environmental monitoring of all installed measures will continue until it has stabilised, and a maintenance team will be employed to undertake any physical works on site.

9 Waste Management

9.1 Introduction

9.1.1 Under the Environmental Protection Act 1990, producers of waste have a 'Duty of Care' to ensure that waste is managed properly.

9.1.2 Waste that is likely to be generated includes plastic, wood, paper, cardboard, assorted metals, general waste, cement, and hazardous waste. These will be stored in a number of relevant covered or lidded skips with waste recycled where possible. General waste will go to landfill, material from other skips will be recycled including plastic, metal and paper. Re-use of materials such as wood will be encouraged. Material storage areas will be clearly located and signed. Key waste streams will be segregated. The segregation scheme will include appropriate training, monitoring and enforcement with clear signage and using the National Colour Coding Scheme.

9.1.3 Waste Transfer Notices (WTNs) will be acquired and kept for inspection. WTNs must include a detailed record of the waste source and destination, description (including correct European Waste Catalogue (EWC) code), load volume and how it is contained.

9.1.4 All waste will be transported from site at an appropriate frequency by a registered waste carrier to prevent overfilling of waste containment facilities and will be reused/recycled where practical.

9.1.5 All possible actions will be taken by the Contractor to avoid or minimise the volume of waste generated.

9.1.6 Where hazardous waste is to be transported, SEPA must be notified and specific hazardous Waste Consignment Notes (WCNs) are required to be purchased.

9.1.7 The contractor will nominate an appropriate person to take responsibility for the implementation and monitoring of the site waste management plan. All employees, subcontractors and suppliers will be briefed regarding the general site waste management strategy as part of the site induction procedures and as appropriate to the task to be undertaken.

9.1.8 Waste management will be on the agenda for all regular meetings.

9.1.9 Littering on site will not be tolerated and all employees, suppliers and visitors will be briefed on the appropriate waste storage and disposal procedures on the site (including locations and appropriate use of recycling bins and skips).

9.1.10 Waste materials will not be stored within 50 metres of a watercourse wherever possible. Where this may not be practically achievable, the Contractor will provide detailed justification for a reduction in this specified buffer distance, however, irrespective of the justification provided, on no account will this buffer distance be reduced to less than 20 metres.

9.1.11 All areas used for storage of waste materials will comply with the SEPA Pollution Prevention Guidelines (PPG's). Waste storage and disposal will be carried out in such a manner as to prevent pollution and ensure compliance with current waste legislation.

9.1.12 No materials shall be burned on site. Hazardous waste shall be held in a separate skip and shall be disposed by a licensed waste contractor to a suitable licensed site.

9.2 Waste from Welfare Facilities

9.2.1 This will primarily be food waste, paper, plastics, glass and other typically domestic refuse generated in the offices and canteen areas within the site compound, as well as on site. All waste of this type will be stored in an appropriate location, protected from wind, rain and wild

animals. Facilities will be provided to segregate waste into appropriate waste streams (glass, paper etc) and minimise volumes of material stored (e.g. folding and baling of cardboard waste. Sewage will also be generated at welfare facilities. Disposal of sewage from the site will be carried out by methods recommended in SEPA PPG4, including off-site removal by tanker to an approved disposal point.

9.3 Concrete

9.3.1 Where possible a settlement and re-circulation system for water reuse will be considered for water used in concrete batching and wash out areas. Alternatively, wastewater from wash out areas will be tankered off site. Remaining cement will be taken to waste disposal facilities.

9.3.2 Any wastewater generated from concrete batching will be adequately treated to deal with suspended solids and high alkalinity before discharge under conditions and methods as agreed with SEPA.

9.4 Waste Chemicals, Fuel and Oils

9.4.1 Engine and hydraulic oil waste will be stored on site and disposed of in accordance with SEPA PPG2 and PPG8.

9.5 Packaging

9.5.1 This includes waste materials arising from packaging of equipment or materials brought onto site, including paper, plastics and wood used for packaging turbine components, reinforcing rods, concrete formwork, cement and other raw materials. Where possible, packaging will be returned to originator for reuse ahead of recycling or disposal. Alternatively, they will be stored on site in a sealed skip and disposed of in accordance with PPG6.

9.6 Waste Metals

9.6.1 Where there is residual metal such as from steel reinforcing rods for concrete and cabling, it is expected to have some commercial value and will be suitable for re-use or recycling.

9.7 Cleaning Activities

9.7.1 Cleaning activities (e.g. for plant, vehicles, wheel washes, concrete truck wash out etc) can produce large volumes of polluted water. All cleaning activities will therefore be carried out in an appropriate enclosed area and wastewater captured for treatment and appropriate discharge.

9.8 Excavated Materials

9.8.1 Excavated materials may or may not, be classed as waste in accordance with the legal definition. It is planned to use all excavated material on site and have zero excavated material waste to remove from site.

9.9 Spillages

9.9.1 In the event of any spillages on site, the following procedures will be followed:

- Call for assistance from other site staff, as necessary;
- Ensure that the spillage cannot enter any drains or watercourses;
- Spill kits at work sites will be used to clean up the waste;
- All contaminated clean-up materials and excavated materials will be disposed of as special waste;
- Inform the Construction Manager or Project Manager who will contact SEPA if necessary, plus a specialist contractor if required; and
- In the event of a serious health and safety, planning or environmental incident the ECoW will notify Scottish Ministers.

9.10 Litter

9.10.1 During construction, toolbox talks will be held with operatives and these will emphasise the avoidance of littering. If litter is found on site, the Contractor will arrange a litter pick exercise, and further emphasis in daily toolbox talks. As each Contractor leaves site, a final litter check/pick exercise will be carried out. A large portion of the site is rough grazing, and landowners will also report any litter issues. Litter comprises all manmade waste left on site, including materials, packaging, spare parts, bolts and general rubbish.

10 Environmental Protection

10.1 Ecological Clerk of Works

10.1.1 CWL will manage the construction of the wind farm and will be assisted by an ECoW, an Engineer and competent Construction Design and Management advisor etc.

10.1.2 Liz Parsons of Starling Learning has previously been approved as the appointed ECoW for Community Windpower's wind farm projects and this appointment will be extended to incorporate the construction of the Scoop Hill scheme, which falls within the Dumfries & Galloway Council administrative area.

10.1.3 Responsibilities of the appointed ECoW in regard to the wind farm, will include:

- Environmental inductions: Prior to commencing work on site, environmental inductions will be administered by the ECoW to key managers of the Contractor. This induction will cover environmental matters specific to the project and outline the procedures that will be taken to reduce environmental impacts of construction activities, plus the need to be constantly watchful for pollution potential in storm events, and of the response needed if pollution is observed. Inductions of all staff and visitors will be undertaken by the Contractor to relay key environmental points. These inductions will be supplemented with regular environmental toolbox talks on site-specific topics to all site operatives;
- Inspections and Liaison: Regular site inspections and liaison with the Contractor's Environmental Manager to optimise environmental measures and minimise pollution risk. The ECoW will undertake daily inspections of site initially then twice weekly plus additional inspections at times of poor weather. The ECoW will be in contact with the Responsible Person who is undertaking Daily Checks on site.
- Track construction: Prior to the actual track construction, the Contractor will 'set-out' the proposed route in 500–1000m sections in conjunction with the ECoW, to ensure that the

correct track construction methods are employed and that proposed drainage routes are suitable;

- Prior to the construction of tracks, the ECoW will mark out on site any sensitive habitats including known GWDTE's to the proposed access track to ensure that these important habitats are avoided and the water supply to them is undisturbed.
- Micro-siting: The ECoW shall have control over local micro-siting to avoid any ecologically sensitive areas. A variation of the indicated position of any turbine or track shall only be permitted following the approval of the ECoW;
- The excavation of vegetation, organic soil and subsoil: The ECoW will advise the appointed contractor regarding suitable storage areas and final placing following excavation of the material;
- Drainage systems: The ECoW will liaise with and advise the appointed contractor to agree the most appropriate methods for drainage systems to ensure that best practice is adopted to minimise increased risk of sedimentation into the watercourses;
- Pollution prevention: Silty water caused by construction activities will be prevented from entering surface water drains or watercourses by the use of silt fences, cut off drains, silt traps and drainage to vegetated areas where appropriate. This will be monitored regularly by the Contractor and ECoW. Excavated material will be stored local to the site of excavation and/or local to the end–use site where it is required for re-profiling and landscaping purposes. These locations will be decided upon following consultation with the appointed ECoW, with sensitive habitats and species in mind, as well as considering potential risks from material instability and run off into watercourses;
- Appropriate seed-mixes: Reinstatement will typically comprise of relocating the previously stripped turves and vegetation. Reseeding areas may be required and appropriate seed-mixes and any alternative restoration such as natural regeneration would be agreed with the appointed ECoW and agreed with the local authority;
- Provision for the protection of ecological and ornithological interests: The ECoW role will include working closely with the Contractor to oversee the implementation of this CEMP, which aims to describe the least environmentally intrusive construction methods;
- Site reinstatement: Where possible site reinstatement will be undertaken concurrent with construction, however there may be sections were the reinstatement is carried out after completion of the main construction. The Contractor will be responsible for reinstatement works, overseen by the ECoW and site agent; and
- Species protection: Inspection of land prior to stripping of topsoil and vegetation at locations and times that are species sensitive. Regular monitoring of known key species locations and construction areas for evidence of presence of important species and planning to ensure no adverse impacts on these;
- Monitoring of measures conditioned in Pollution Prevention Plan.

10.2 Protection of Ecological and Ornithological Interests

10.2.1 A Habitat Management Plan (HMP) following the principles set out in the EIAR is being produced and will be subject to consultation with Galloway Fisheries Trust, RSPB, NatureScot, SEPA, and Dumfries and Galloway Council.

10.2.2 Species Protection Plans (SPP) will also be produced alongside the HMP, for protected species recorded on the development site, in consultation with the ECoW and the above-named consultees.

10.2.3 Monitoring of fish and fish populations within watercourses, particularly salmon and trout, will take place pre-construction, during construction and post-construction.

10.2.4 This makes provisions for the protection of ecological, ornithological and fishery interests within the development area prior to construction commencing, during the construction works and post-construction.

10.2.5 The implementation of the HMP, the SPPs and monitoring will be overseen by the ECoW.

11 Peat Depth and Stability Assessment

11.1 Background Information

11.1.1 A peat probing survey has been undertaken and volumetric calculations of peat usage and stability undertaken.

11.2 Peat Stability

11.2.1 Based on the results of the survey work and the peat slide risk assessment in Technical Appendix 10.2 of Section 10 of the EIAR, peat stability is not considered to be a concern on the Scoop Hill site.

12 Temporary Site Illumination

12.1.1 The site will be illuminated only where necessary for the health and safety of the workers.

12.1.2 Each turbine foundation concrete pour may take 12 or more hours and so illumination will be provided to allow safe access and egress, adequate quality control and safe vehicle and operative manoeuvres.

12.1.3 Temporary lighting will be required at the construction compounds to allow safe pedestrian movements, these lights may be fixed to individual cabins or containers, or a temporary/moveable column type. Any security post and the site entrance may be lit to provide adequate visibility for operation of that post.

12.1.4 Turbine foundation works is likely to be lit by mobile lighting and generator units. The construction compounds and security post will be lit by external lights on the exterior of the temporary buildings.

12.1.5 All lighting will be removed/turned off when construction works are complete for the day, however there may be the need for security lighting later than this.

13 Construction Works

13.1 Programme

13.1.1 The main construction period for the wind farm proposal is envisaged to last for around 18 months, from commencement of construction through to installation and commissioning of the turbines, including site reinstatement. An indicative construction programme is included as Appendix B.

13.1.2 Construction would consist of the following stages, which although presented in a typical sequence, may overlap or occur concurrently:

- Construction of site construction compound to accommodate site offices and mess facilities and to provide a storage area for off-loading materials and components;
- Establishment of borrow pits;
- Construction/upgrading of access routes;
- Construction of site tracks for access to turbine locations, including reinstatement of track edges and verges;
- Construction of turbine foundations and hardstands;
- Laying of on-site cabling;
- The delivery, erection and installation of turbine towers and installation of nacelles and blades;
- Erection of the meteorological mast;
- Commissioning of turbines; and
- Site reinstatement, including borrow pits, site compounds etc.

13.2 Weather Contingency

13.2.1 Turbine suppliers endeavour to have a turbine erected every 2-3 days in good weather; however the Contractor will monitor weather forecasts on a daily basis in an attempt to predict periods of potential flooding on site, or potential issues caused by dry weather.

13.2.2 The construction programme makes allowances for an amount of weather downtime (high winds, storms, lightning risk etc.). In the event of severe weather, the indicative construction programme will be pushed back.

13.3 Tree Felling and Management Plan

13.3.1 Tree felling and management information is included as part of the EIAR in Section 13: Forestry. Felling of the commercial forestry will be undertaken by a competent contractor, who will comply with all relevant SEPA guidelines and requirements. All timber and brash will be removed from the site. The commercial replanting will be undertaken again by a competent contractor again complying with the current SEPA guidelines and requirements.

	Construction Week																																				
Task	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Mobilisation																																							
Access & Site tracks																																							
Foundations																																							
On-site cabling																																							
Crane Pads																																							
Substation - Civil																																							
Substation - Electrical																																							
Off-site Cabling																																							
Turbine Delivery																																							
Turbine Erection																																							
Energy Storage Installation																																							
Task	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
Crane Pads																																							
Substation - Civil																																							
Substation - Electrical																																							
Off-site Cabling																																							
Turbine Delivery																																							
Turbine Erection																																							
Energy Storage Installation																																							
Commissioning and Testing																																							
Site Reinstatement*																																							

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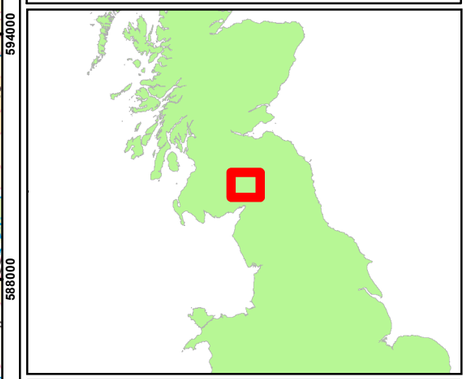
374 Scoop Hill

Legend

- Site Location
- Dumfries and Galloway Boundary

Notes:
Central coordinates for the site are: 316498, 596716
Revisions: N/A



0 1,500 3,000 6,000 m

Scale: 1:150,000 @ A3

N

Figure 1: Site Location

Date: 29/07/2020	Ref: 374-200729-7368	
Produced: DR	Reviewed: SM	Approved: GC

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374 Scoop Hill

Legend

- Site Boundary
- Wind Turbine (180m to tip)
- Wind Turbine (200m to tip)
- Wind Turbine (225m to tip)
- Wind Turbine (250m to tip)
- Permanent Met Masts
- Access Tracks
- Site Entrance
- Existing Access Tracks to be Upgraded
- Substation & Control Room
- Substation & Control Room Construction Compound
- Temporary Construction Compound
- Borrow Pit
- Existing Quarries or Borrow Pit
- Borrow Pit Area of Search

Notes: N/A
Revisions: N/A
Turbine Layout: 374-191212-9018

0 500 1,000 2,000 m
Scale: 1:55,000 @ A3

N

Figure 2 – Site Layout

Date: 29/07/2020 Ref: 374-200729-7369-A
Produced: DR Reviewed: SM Approved: GC

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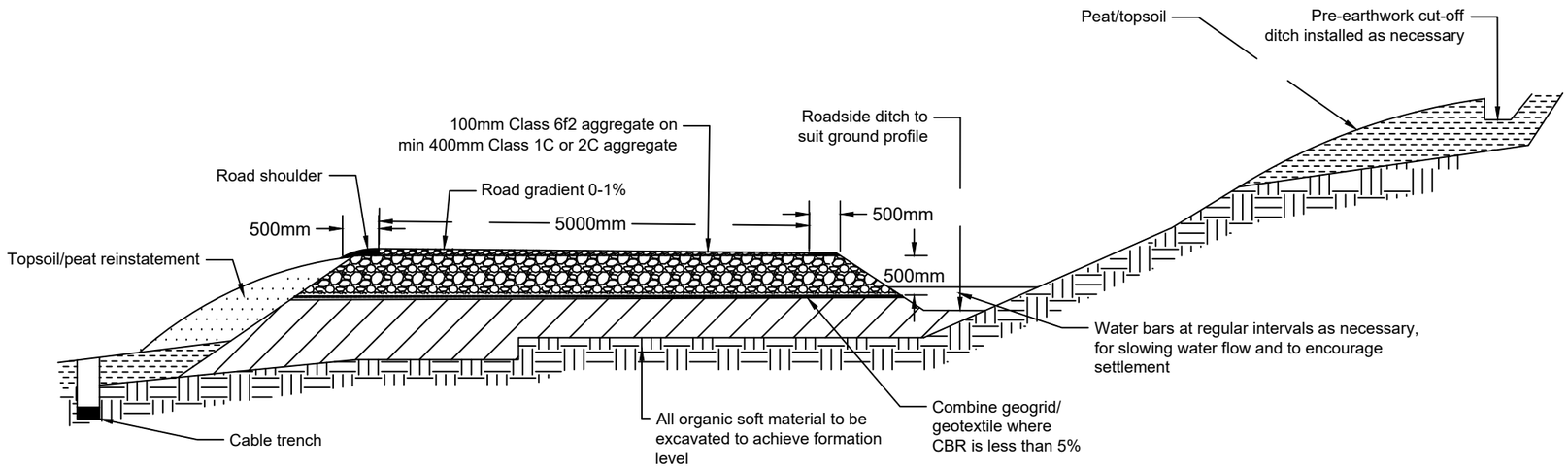
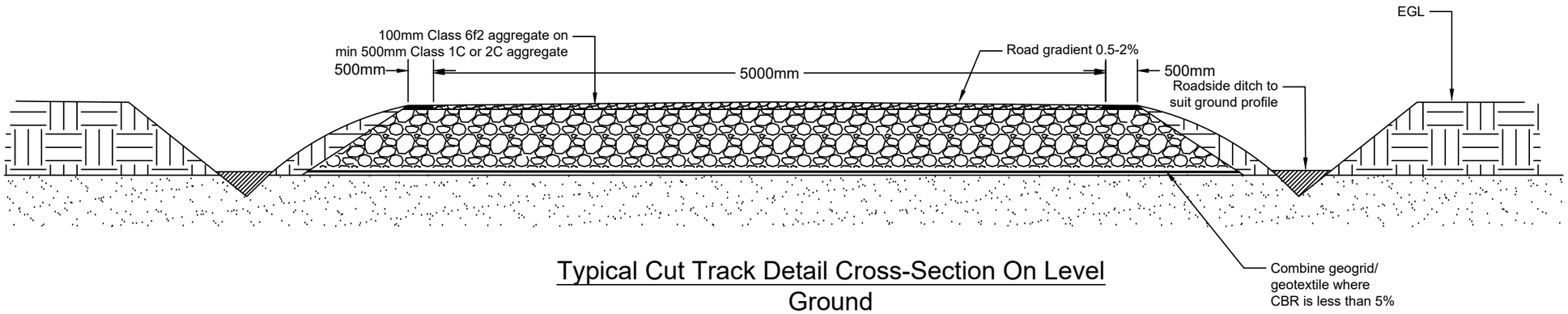
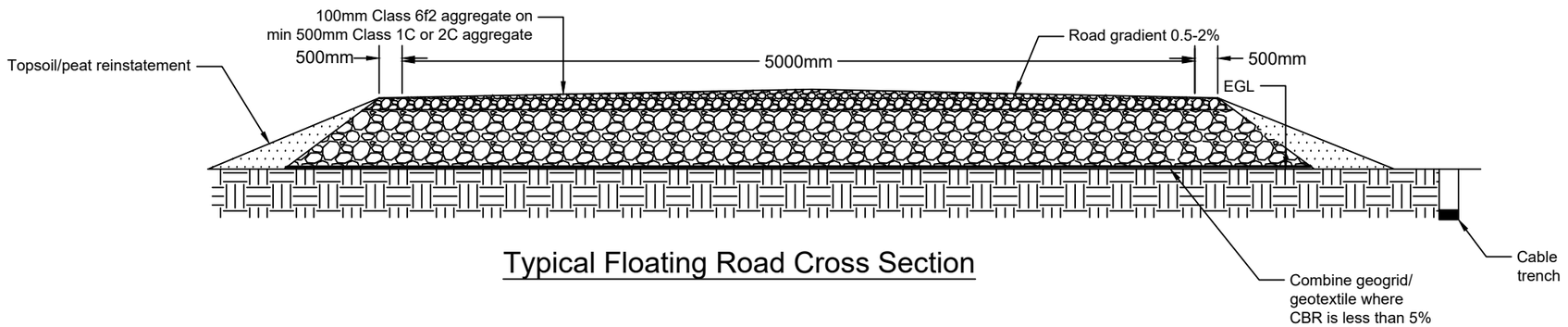
Not To Scale



Typical Cut Track Detail Cross-Section On Slightly Sloping Ground



Typical Cut Track Detail Cross-Section On Level Ground



Typical Floating Road Cross Section

374 Scoop Hill

Notes: N/A
Revisions: N/A

Figure 3a - Typical Access Track Design

Date: 30/07/2020 Ref: 374-200729-7370

Produced: DR Reviewed: SM Approved: RF

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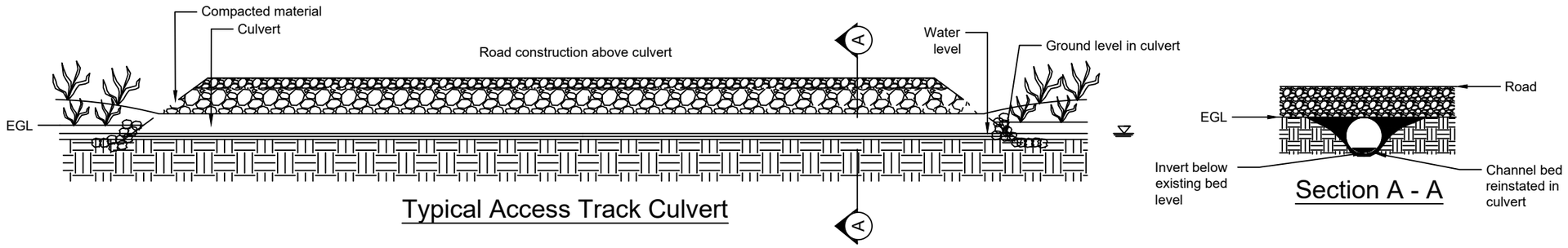

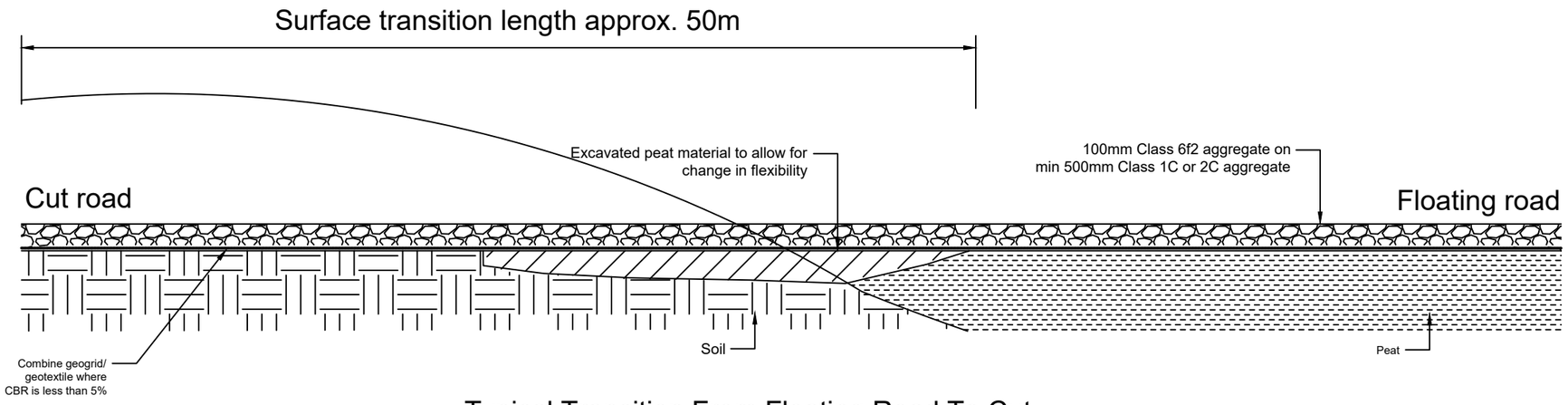

Typical Transition From Floating Road To Cut Track Construction Detail

374 Scoop Hill

Notes: NTS
Revisions:

Figure 3b - Typical Access Track, Track Methodology And Culvert Design

Date:30/07/2020 Ref: 374-201106-7433

Produced: DR Reviewed: SM Approved: RF

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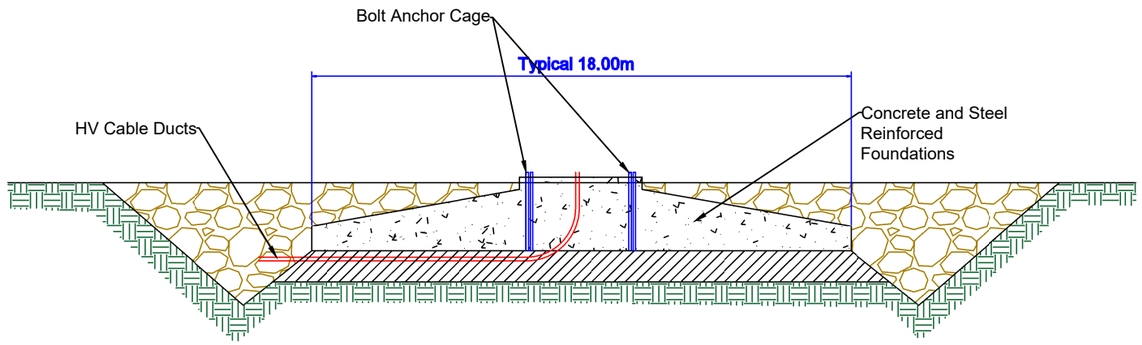
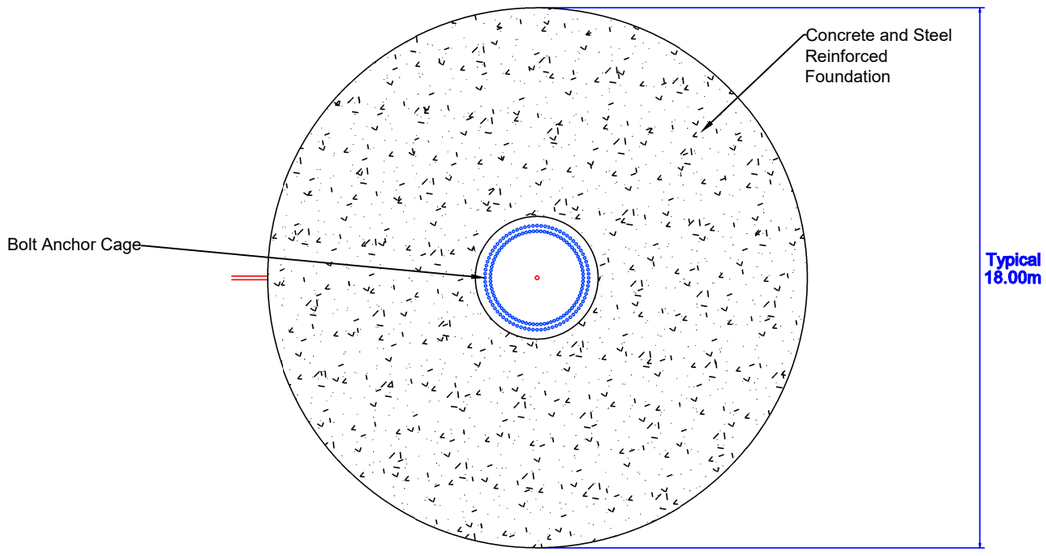
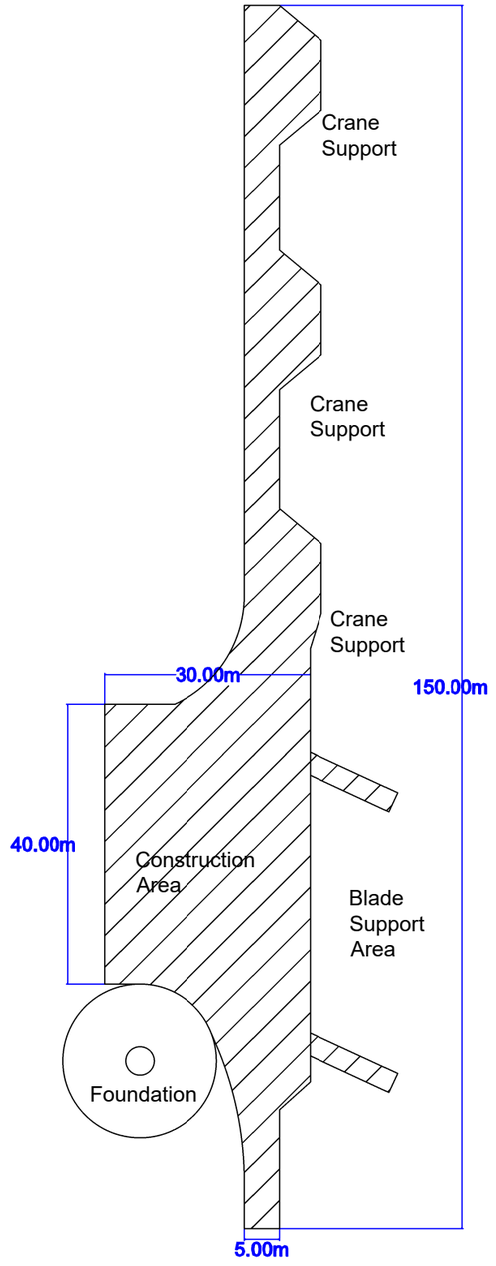


Section View of Typical Turbine Foundation



Plan View of Typical Turbine Foundation

Scale: NTS



Typical Crane Hardstand Area

Scale: NTS

374 Scoop Hill

Notes:
All foundations and crane hardstands to be built to the turbine suppliers Site Specific Requirements.

Depth of stone used in constructing hardstand may vary depending on ground conditions encountered. Stone depth will be to a suitable formation strata.

The foundation design has assumed a suitable formation layer is beneath the engineering stone fill.

Revisions: N/A

Figure 4 - Typical Foundation & Crane Hardstand Design

Date: 30/07/2020 Ref: 374-200729-7371

Produced: DR Reviewed: SM Approved: RF

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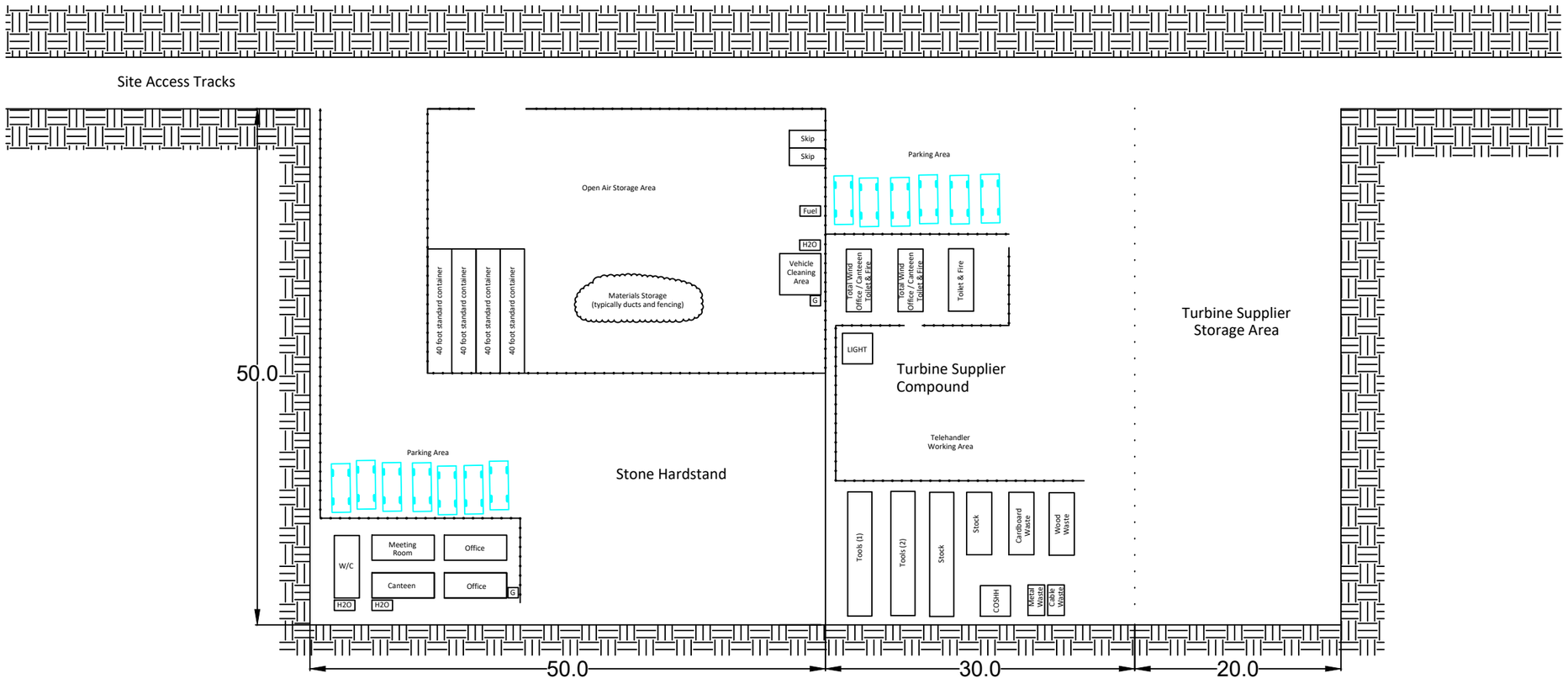
Scale: 1:500 @ A3



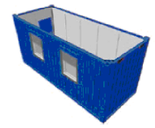
374 Scoop Hill

Legend

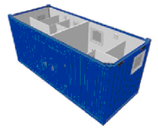
- Fence
- G — Generator
- Car / LGV
- Fuel — Fuel Bowser
- H2O — Water Bowser

Compound Items

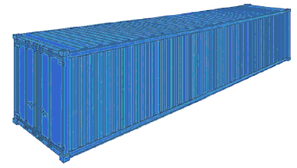
Office Cabin (6055mm x 2435mm)



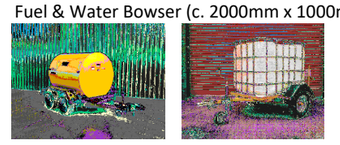
WC Cabin (6055mm x 2435mm)



Container (12036mm x 2350mm)

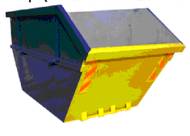


Fuel & Water Bowser (c. 2000mm x 1000mm)



Diesel Generator (c. 1000mm x 1000mm)

Skip (3510mm x 1700mm)



Notes:
Individual cabins have internal lighting and external safety lighting.
A mobile lighting column will also be located in the compound area.
Rolled stone finish for temporary site compound finished surface.

Revisions: N/A

Figure 5 - Typical Temporary Construction Compound Layout

Date: 30/07/2020	Ref: 374-200729-7372	
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