

# Technical Appendix 3.1: Outline CEMP

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## 1.0 Executive Summary

This outline Construction Environmental Management Plan (outline CEMP) has been prepared to detail good practice methods for ensuring the management of environmental impacts likely to arise during the construction phase of the Proposed Development. It incorporates good practice methods, risk mitigation and monitoring.

The outline CEMP comprises a suite of documents, comprising:

- Construction Method Statement;
- Peat Management Plan;
- Dust and Mud Management Plan;
- Drainage Management Plan;
- Pollution Prevention Plan;
- Ground and Surface Water Monitoring Plan; and
- Forestry Waste Management Plan.

The key features of each plan are detailed in Table 1 – Outline CEMP contentTable 1.

**Table 1 – Outline CEMP content overview**

Plan	Key Features
Outline CEMP	<ul style="list-style-type: none"> <li>– Provides background and overarching aims.</li> <li>– Hosts the suite of plans listed in Table 1.</li> <li>– Summarises relevant guidance followed.</li> </ul>
Construction Method Statement	<ul style="list-style-type: none"> <li>– Project scope and programme detailed.</li> <li>– Roles and responsibilities defined.</li> <li>– Health and safety procedures outlined.</li> <li>– Design philosophy explained, which seeks to minimise environmental impacts at the design-stage. For example, by track route selection.</li> <li>– Construction methodology outlined.</li> </ul>
Site Waste Management Plan	<ul style="list-style-type: none"> <li>– Provides detail on the strategy to reduce, re-use and recycle waste generated on site.</li> <li>– Details waste storage methods.</li> <li>– Details waste record-keeping and monitoring.</li> </ul>
Peat Management Plan	<ul style="list-style-type: none"> <li>– There are localised areas of peat on site.</li> <li>– Peat impacts will be minimised through track route design. Existing tracks will be used and peat will be avoided for new tracks where possible.</li> <li>– Good practice measures for peat excavation, storage and reinstatement will be followed.</li> <li>– Refer to Technical Appendix 10.2.</li> </ul>
Dust and Mud Management Plan	<ul style="list-style-type: none"> <li>– Dust may be generated during dry conditions.</li> <li>– Mud may be generated during wet conditions and during earthworks operations.</li> <li>– Dust and mud is unlikely to cause nuisance to the local community due to distance to receptors but could affect the vegetation and watercourses on site.</li> <li>– Measures will be put in place to minimise the potential for dust and generation and to mitigate the effects of dust and mud.</li> <li>– Presence of dust and mud will be routinely monitored.</li> </ul>
Drainage Management Plan	<ul style="list-style-type: none"> <li>– Drainage arrangements will need to be considered in contractor method statements for all work activities.</li> <li>– Priority is to protect the Tweed Water catchment from pollution.</li> <li>– The site will be drained to existing lagoons where possible.</li> <li>– SuDS principles will be incorporated in the design, which may include swales, ditches and settlement ponds.</li> </ul>

Plan	Key Features
	<ul style="list-style-type: none"> <li>– Water crossing methods discussed.</li> </ul>
Pollution Prevention Plan	<ul style="list-style-type: none"> <li>– Sources of pollution and sensitive receptors defined.</li> <li>– A range of good practice mitigation measures outlined.</li> <li>– Pollution Incident Plan included.</li> </ul>
Ground and Surface Water Monitoring Plan	<ul style="list-style-type: none"> <li>– Details proposals for monitoring the ground and surface water quality during and after construction.</li> <li>– Surface water sampling points proposed to enable effectiveness of pollution controls to be monitored.</li> <li>– Surface water sampling methodology outlined.</li> <li>– Groundwater levels will be monitored prior to construction in borehole standpipes installed following completion of the ground investigation.</li> </ul>
Forestry Waste Management Plan	<ul style="list-style-type: none"> <li>– Details proposals for minimising environmental impact of timber harvesting and extraction.</li> <li>– Details the treatment of residual forestry waste – stumps and brush.</li> </ul>

## 2.0 Introduction

### 2.1 Introduction

This outline CEMP for Oliver Forest Wind Farm (the Proposed Development) incorporates good practice methods for ensuring the reduction and mitigation of environmental impacts likely to arise during the construction phase. Note that this outline CEMP should be considered an outline and a live document. The outline CEMP will be developed into the CEMP post-consent to align with the relevant planning conditions.

### 2.2 Outline CEMP Structure

This outline CEMP comprises a suite of documents, as follows:

- Construction Method Statement (CMS);
- Site Waste Management Plan (SWMP);
- Dust and Mud Management Plan (Dust MP);
- Drainage Management Plan (DMP);
- Pollution Prevention Plan (PPP);
- Ground and Surface Water Monitoring Plan (GSWMP); and
- Forestry Waste Management Plan (FWMP).

Information related to peat management on the site is set out in Technical Appendix 10.2.

### 2.3 The Proposed Development

The site is centred on National Grid Reference (NGR) 308300, 624200 and covers an area of approximately 350 ha in total. The characteristics of the site are described in Chapter 2.

The Proposed Development would comprise of seven three-bladed horizontal axis turbines up to 200 m blade tip height and associated infrastructure battery storage.

### 2.4 Aims and Objectives

The purpose of the outline CEMP is to:

- ensure that construction activities are carried out in a manner which minimises effects on the environment;
- provide a mechanism for ensuring that measures to prevent, reduce or mitigate potentially adverse environmental impacts identified in the EIA Report and this outline CEMP are implemented;
- ensure that good construction practices are adopted and maintained throughout the construction of the Proposed Development;

- provide a framework for mitigating unexpected impacts during construction;
- provide assurance to third parties that their requirements with respect to environmental performance will be met;
- provide a mechanism for ensuring compliance with environmental legislation and statutory consents; and to
- provide a framework against which to monitor and audit environmental performance.

## 2.5 Roles and Responsibilities

The CEMP will be provided to the contractors appointed to construct the Proposed Development and will form part of the documentation required to ensure compliance not only with planning requirements but also environmental and other legislative requirements. This outline CEMP takes account of and refers to information contained within the EIA Report.

The CEMP will form part of the specification and contract for the works that the Applicant will impose on their contractors as contractual obligations.

The selected contractor will develop this outline CEMP with respect to the following:

- Task-specific method statements.
- An application to Scottish Environment Protection Agency (SEPA) for a Construction Runoff Licence.
- Site Waste Management Plan.

The implementation of the CEMP (including procedures, record keeping, monitoring and auditing) will be overseen by an environmental professional, referred to as the Ecological Clerk of Works (ECoW). Additional technical experts (ecologists, archaeologists, etc.) will be appointed to support the ECoW as required.

Monthly environmental management meetings will be held between the ECoW, Planning Monitoring Officer (PMO), the Principal Contractor and the Applicant to provide updates on environmental mitigation measures and performance and identify actions for improvement where necessary.

More detail on specific roles and responsibilities is provided below:

### **The Applicant**

The Applicant shall take overall responsibility for compliance with environmental matters and shall appoint a suitably experienced project manager to oversee the project's construction phase. The Applicant's project manager shall ensure that the key responsibilities in the outline CEMP are appropriately delegated to the Principal Contractor, ECoW, EnvCoW, and others.

The Applicant shall be responsible for developing this outline CEMP into a full CEMP.

### **Principal Contractor**

The Principal Contractor shall be responsible for the construction of the Proposed Development. The Principal Contractor shall appoint suitably experienced staff, including a project manager and dedicated environmental manager who shall be responsible for providing technical expertise to the Principal Contractor, in particular with regards to drainage design and environmental mitigation.

The Principal Contractor shall be responsible for obtaining all necessary consents, licences and permissions for their activities and for implementing the requirements of the CEMP.

### **Ecological Clerk of Works (ECoW)**

The Applicant shall appoint an ECoW prior to works commencing on site. The ECoW would be focused on works supervision, advice and conducting walkovers prior to plant movement and habitat removal.

### **Environmental Clerk of Works (EnvCoW)**

The EnvCoW shall specialise in hydrology and drainage. The key focus of the EnvCoW shall be ensuring that that environmental mitigation measures are in place ahead of works starting, for example cut-off ditches, settlement lagoons, silt fencing. The EnvCoW will regularly review the installed drainage and mitigation works to ensure it meets the requirements of the CEMP.

### **Planning Monitoring Officer**

The PMO is responsible for reviewing the Applicant's compliance with the project's planning conditions and reporting back to the Planning Authority. The PMO shall visit site on a monthly basis and prepare a

monthly report. A key focus for the PMO shall be the compliance with the CEMP and protection of the environment. The PMO shall be an independent environmental specialist selected by the Planning Authority.

## 2.6 Level of Information

The project is at pre-consent stage and therefore no contracts have been awarded for construction work and ground investigation reports are not yet available. Consequently, some of the information provided in this outline CEMP is necessarily generic. Task-specific method statements incorporating the requirements of this outline CEMP will be developed by the selected contractors post-consent and prior to works starting on site.

## 2.7 Relevant Guidance

The following guidance has been followed in the preparation of this outline CEMP and the management plans contained herein:

Pollution prevention guidance:

- PPG 1: Understanding your environmental responsibilities - good environmental practices
- GPP 5: Works and maintenance in or near water
- PPG 6: Working at construction and demolition sites
- GPP 13 Vehicle washing and cleaning
- GPP 21: Pollution incident response planning
- PPG 22: Incident response - dealing with spills

Construction Industry Research and Information Association (CIRIA) guidance is recommended:

- Design Manual for Scotland and Northern Ireland (2000)
- Environmental Good Practice on Site (2005)
- C697: Sustainable Urban Drainage Systems Design Manual for Scotland and Northern Ireland, March (2007)
- C532: Control of water pollution from construction sites (2001)
- C648: Control of water pollution from linear construction projects (2006)
- Drainage of development sites - a guide (X108)
- Guidance on the Construction of Sustainable Drainage Systems (SUDS) (C768)
- Site handbook for the construction of SUDS (C698)
- Sustainable Drainage Systems - Hydraulic, structural and water quality advice (C609)
- The SuDS Manual (C753)

Other guidance:

- Scottish Natural Heritage (SNH) et al: Good Practice During Wind Farm Construction, 4th Edition 2019
- Forestry Commission: Forests and Water Guidelines Edition 5, 2011
- SNH: Constructed Tracks in the Scottish Uplands, 2nd Edition 2015
- SEPA: Engineering in the water environment: good practice guide. Sediment management First edition, June 2010
- SEPA: WAT-SG-29: Engineering in the Water Environment Good Practice Guide: Temporary Construction Methods, First edition, March 2009
- SEPA: WAT-SG-25 Engineering in the water environment: good practice guide. River crossings Second edition, November 2010

## 3.0 Construction Method Statement

### 3.1 Introduction

This Construction Method Statement (CMS) has been prepared to detail the methods to be used in the construction of the Proposed Development. It includes details of the Proposed Development scope, structure, design strategy, programme and construction methods.

### 3.2 Project Scope

The Proposed Development construction will include:

- tree felling works;
- upgrade of existing access tracks;
- construction of new access tracks;
- construction of temporary construction compounds;
- construction of the wind farm substation and control building;
- construction of the Scottish Power Energy Networks (SPEN) substation and control building (to connect to the electricity transmission network);
- installation cables from the wind turbines to the wind farm substation;
- construction of turbine foundations and associated hardstandings;
- erection of wind turbines;
- opening up of borrow pits and processing of stone;
- construction of a Battery Energy Storage System (BESS);
- construction of heritage trail, signage and associated parking area;
- habitat enhancement work;
- commissioning of all infrastructure; and
- post-construction restoration and reinstatement works.

### 3.3 Working Hours

The site working hours will be determined by a planning condition should consent be granted. The working hours would be expected to be:

- Monday to Friday – 07:00 to 19:00 inclusive
- Saturday – 07:00 to 13:00 inclusive

There may be specific activities such as turbine component delivery, wind turbine erection, maintenance works, or emergency works which may need to take place outside of these hours.

Due to the nature and location of the site as well as the extent of the construction programme, which will see construction take place throughout the different seasons of the year, some construction activities which are highly dependent on the weather conditions require flexible working hours in order to be completed safely and efficiently. The following activities are particularly relevant.

- Ground works and road construction - benefit from drier weather.
- Turbine base concrete pours - require a stable rate of concrete supply and can take up to 11 hours for each turbine location to be poured.
- Turbine deliveries – require to be undertaken when the public road network is not busy and to suit the availability of escort vehicles and Police Scotland.
- Turbine erection works - are highly dependent on low wind speeds. Wind speeds can significantly vary during the day and it may be the case that turbine erection is not possible until late evenings or night times. These operations will not generate particular excessive noise at any noise sensitive locations.



Should any of the activities described above be required to be undertaken outside of the hours prescribed in the planning condition, the Applicant will seek the prior written approval of Scottish Borders Council (SBC).

Should blasting be required, it will be restricted to within the hours of 10:00 to 12:00 and 14:00 to 16:00 Monday to Friday, and 10:00 to 12:00 on Saturdays. There will be no blasting on Sundays or Bank Holidays.

### 3.4 Programme

An indicative programme is contained in Chapter 3; this programme may be subject to change.

Construction is anticipated to commence in 2029 and would last approximately 18 months. A detailed construction programme would be developed post-consent.

### 3.5 Public Access

There are no formal Rights of Way (RoW) or Core Paths through the site as confirmed through consultation with Scottish Rights of Way and Access Society (Scotways) and SBC. However, the site does already include several forestry access tracks which are utilised by the public for recreation under the right to roam.

To ensure the safety of members of the public during the construction of the Proposed Development, appropriate access control measures and signage will be detailed by the Principal Contractor. A Preliminary Access Management Plan has been developed (Technical Appendix 14.1) and it is anticipated that, should the Proposed Development be consented, that the PAMP would be updated in liaison with key stakeholders to form an Access Management Plan for the site.

### 3.6 Health and Safety

#### General

All works will be in accordance with “*Onshore Wind Health & Safety Guidelines*” (RenewableUK 2015) and the Construction (Design & Management) Regulations (2015) (the CDM Regulations) and any other relevant legislation as appropriate.

#### Contact and Emergency Details

The Applicant will establish and maintain a liaison procedure for public, authority and emergency use throughout the construction programme. This procedure will include the names, responsibilities and contact telephone numbers of key personnel.

#### Procedures

Prior to commencement of construction, the Applicant will formally appoint a Principal Contractor in accordance with the CDM Regulations. The Principal Contractor will prepare a Construction Phase Health and Safety Plan (CPHSP) prior to the commencement of construction works. Method statements and risk assessments will be prepared out for all work activities before they are commenced and incorporated into the relevant section of the CPHSP. The CPHSP will be reviewed regularly and updated with method statements as and when required.

#### Fencing

Temporary fencing is required at locations where there are safety implications for any persons likely to be present on the site e.g. around open excavations and borrow pits. Suitable fencing and warning signage will be installed to ensure the safety of the public from construction works as per the PAMP in Technical Appendix 14.1.

#### Consultation

The Applicant will maintain liaison with all relevant parties throughout the works. The local community council and councillors will be consulted prior to the start of construction and throughout the construction phase to enable key information to be conveyed and any concerns listened to and addressed.

The Applicant will ensure that all contractors are informed of any obligations with respect to compliance with planning conditions.

#### Site Compound

Two temporary construction compounds would be established, the locations of which are depicted on Figure 3.2. This will comprise site offices for the contractors and the Applicant, together with changing

and messing facilities, parking and toilets for the workforce. The compounds will also be used for general storage, storage of fuel and waste management. An indicative construction compound layout is set out on Figure 3.10.

A suitably sized generator with integral bunded fuel tank will be located within the compound to provide temporary power during the construction period.

#### **Water Supply**

Potable water will be brought to site for use as drinking water (by bowser). A high-level storage tank will be installed on site.

A borehole may be required to supply non-potable water to the compound facilities.

#### **Welfare**

Welfare facilities will consist of a mess room, drying room/changing room and toilets provided by the Principal Contractor.

#### **Toilet System**

During the construction phase, toilets will be served from the temporary water supply. The waste will be managed by use of sealed storage and removed from site, or by use of a septic tank and soakaway. Any septic tank discharge to the environment will be authorised by SEPA prior to use, in accordance with the requirements of the Controlled Activity Regulations (CAR).

#### **Site Storage Areas**

All materials, plant and equipment will be stored within the site boundaries within designated construction compounds and laydown areas. Storage of liquids (e.g. fuel oil) and spillage mitigation measures are described fully in the Pollution Prevention Plan (PPP).

#### **Site Cleanliness**

All areas of the site including accommodation areas will be kept clean and tidy with a regime of good housekeeping established to facilitate mobility of personnel and plant / equipment around the site and minimise potential hazards and vermin.

#### **Site Waste Management Plan**

The Site Waste Management Plan (SWMP) will be produced by the Principal Contractor prior to construction works starting on-site. The SWMP aims to minimise waste both in imported materials, and waste created on-site during the construction and excavation processes. The SWMP will minimise the quantities of imported materials through good design and best practice, minimise waste and optimise any waste arisings.

#### **Parking**

The site parking area will be located in the construction compound closest to the site entrance. For the duration of the construction period, an area will be set aside within the construction compound to accommodate sufficient parking areas for the construction work force and site visitors. Parking will not be permitted in any other areas, on or off-site. Segregated areas and signage will be erected within the construction compound to protect the work force from moving vehicles. At the end of the working day all construction plant will be parked in a safe and secure area with appropriate security measures in place to minimise vandalism and unwanted attention from members of the public.

#### **Traffic Management**

Traffic movements on local roads will be managed in accordance with the Construction Traffic Management Plan (an outline construction Traffic Management Plan is provided in Chapter 12).

#### **Wheel Wash**

A wheel wash will be deployed at the construction compound near the site entrance. Vehicles carrying excessive mud will be required to exit through the wheel wash to prevent carryover of construction debris to the public highway.

#### **Signage and Boundaries**

Sufficient signage will be deployed on-site to clearly define the boundary of the works where they coincide with hazardous areas accessible to the public. Secure and appropriate boundaries will be established to ensure that entry to specific hazardous areas of the site by unauthorised persons is prevented (e.g. the temporary construction compounds, open trenches, borrow pits). Gates will be installed at strategic locations on the access tracks to prevent unauthorised vehicular access to the site.

### 3.7 Site Entrance

The entrance to the Proposed Development is off the A701. An existing private forestry road is used to access site. There will be a requirement to upgrade the site access at its junction with the A701 to ensure a sufficient bell mouth is installed to allow abnormal load vehicles to access the site. The site entrance will be gated and the gate will be locked at the end of each working day. Further security measures may also be implemented by the Principal Contractor, such as cameras or guards.

The site entrance will have the first 10 m from the public road covered in tarmac to prevent loose material being dragged over the public road.

The site entrance is required to have a visibility splay of 4.5 m x 215 m. The visibility splay must be kept clear of obstacles and vegetation to allow clear sightlines to be maintained from the junction. It shall be the Principal Contractor's responsibility to maintain the visibility splays – trimming vegetation as required.

### 3.8 Site Tracks

The design of the access tracks and footpaths will include the following details.

- The site benefits from a network of existing forestry tracks. The site design uses existing tracks where possible to limit the requirement for new track construction, although the existing tracks will require upgrading.
- Tracks and footpaths require a micrositing allowance of 100 m to avoid any sensitive ecological, hydrological features and to minimise cut/fill operations and areas of soft or boggy ground or peat.
- Ground investigation works undertaken prior to construction will help to refine track design. Additional topographical surveys will be undertaken along the micrositing corridor to allow the least-impact route to be chosen. This may be supplemented with additional peat probing or trial pit works to determine soil conditions.
- The access tracks will have a minimum width of 5 m, with additional local widening on bends, and at junctions.
- Sufficient passing areas will be incorporated into the track design. These will be kept to a minimum as junctions to spur roads can also be used to facilitate vehicles passing.
- The wheelchair accessible section of the heritage trail shall have a minimum width of 1.2 m and shall incorporate regular passing and turning opportunities.

#### Cut Track Method

The method of cut track construction is set out as follows:

- The vegetation and topsoil will be stripped to formation level.
- Turfs will be stored vegetated side up.
- A cut batter where finished levels dictate will be formed on either side. The cut batter will have an angle of 30 degrees or less.
- The track will be constructed on the subsoil. Depending on ground conditions, a geogrid layer may be utilised to provide structural stability and geotextile membrane to limit the migration of fines. The geogrid/geotextile will be laid directly on the subsoil.
- The upper topsoil layer, together with turfs, will be stored separately from the rest of the subsoil in piles adjacent to, or near the tracks for later reinstatement.
- Once the vegetation and topsoil has been removed, as described above, a layer of geotextile will be placed over the formation area where existing ground conditions dictate that a floating road construction is the most suitable option.
- The track and running surface will be constructed by tipping and compacting crushed stone to a thickness which allows the required bearing strength to be achieved. This thickness will depend on the underlying ground conditions. The capping layer of stone will comprise finer material to provide a smooth running surface.
- Cross sections of the tracks can be seen in Figure 3.5.
- Following construction, the appropriate topsoil and vegetation will be used to reinstate the track shoulders and turbine foundation areas. Any excess material produced from access track construction will be spread along the track shoulders.

- This same method will be used for footpath construction.

#### **Floating Track Method**

A floating track construction will be used in the following circumstances:

- peat is encountered at a depth greater than 1 m; and/or
- the subsoil is unable to support the required loadings.

The use of floating tracks in areas of poor ground conditions eliminates the need for excavation and minimises effects on ecology and hydrology. Floating tracks will not be used if gradients exceed 1:10, or if there is a cross-gradient.

There are isolated areas of peat on site identified in the EIA Report but in general, peat depths are less than 1 m and typically less than 0.5 m therefore classified as peaty soils rather than peat. This is expected to avoid the requirement to float tracks.

However, where micro-siting is unable to avoid the requirement for floating tracks, the following method will be used: A layer of geotextile reinforcement will be placed directly onto the route of the track. There will be no stripping of vegetation or topsoil. The track will then be built up on the geotextile by laying and compacting crushed rock up to a thickness of approximately 500-1000 mm, the exact depth being dependent on ground conditions. A second layer of geotextile may be used approximately 300 mm below the top of track level should this be required to achieve sufficient bearing strength.

#### **Track Drainage**

Side drains will be installed along the new access tracks where appropriate as described in the DMP below. Much of the existing track network has drainage ditches alongside them. The existing ditches will be utilised in the design where possible and these will be reviewed to ensure they are appropriately sized and functioning correctly.

The storage and movement of earthworks will be undertaken in accordance with the PMP (refer to Technical Appendix 10.2) and with reference to *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites* (Defra 2009).

#### **Mitigation**

Environmental mitigation measures will be adopted during construction to prevent siltation and pollution of any nearby watercourses. The protection of watercourses is dealt with in detail within the DMP and PPP, but generally, all watercourses on-site will be protected from possible contamination by using silt traps and siltation ponds where required. All excavation and storage of soils will be carefully monitored to prevent any possible contamination of local watercourses.

Periodic maintenance of tracks by way of grading or scraping will be carried out to minimise the generation of wheel ruts which would enable road material to be washed away. In dry weather, dust suppression methods will be employed as described in the Dust and Mud Management Plan included in this outline CEMP.

#### **Ecological Sensitivities**

Tracks will be pegged out 500-1000 m in advance of operations, which will enable ecological sensitivities to be anticipated well in advance of construction activities. The following procedures will be implemented.

- The ECoW will conduct toolbox talks to make the contractor's staff aware of what to look out for with regards sensitive ecology.
- The ECoW will conduct inspections of the track route in advance of construction activity.
- If a sensitive area is encountered, the ECoW will make recommendations to the Applicant, which may include requesting that the contractor ceases work.
- Additional surveys and ground investigation will be undertaken to identify a route with less sensitivity.
- Should the newly proposed route exceed the 100 m micro-siting allowance, this will be discussed with SBC and no works will be undertaken without their prior agreement.

### 3.9 Watercourse Crossings

The proposed site infrastructure incorporates one existing watercourse crossing over the Hallow Burn, as described in Chapter 10. This watercourse crossing will be reviewed for its capacity and structural capability and if possible, will be left in place and used as part of the design.

Should the existing culvert be determined to be inadequate, it will be replaced with an appropriately designed culvert. Whilst in general, a bottomless design would be preferable, given the size of the watercourse at this location a pipe culvert is likely to be most appropriate, as shown in Figure 3.12.

#### Working Methods

Working method for culvert installation will include:

- the creation of working areas for construction of new abutments – which may require coffer dams to prevent inflow of groundwater, to protect the working areas during increased flow, and protect the watercourse from any pollution;
- excavation to create footings for each abutment on each side of the river;
- construction of abutments including re-use of stored stone for the cladding;
- formation of ramps to new abutments including installing drainage;
- creation of working areas for removal of existing abutments and construction of new abutments – will require a coffer dam to protect the working area, and protect the watercourse from any pollution;
- placement of concrete footings for abutments; and
- construction of abutments including re-use of stored stone for the cladding.

#### Design Details

Should a new watercourse crossing be required, mitigation will be achieved by providing sufficient capacity to ensure:

- the structures have sufficient capacity to convey flood flows arising without surcharging. The new crossings and culverts will be designed to convey the 1 in 200-year return period flood flows (plus an allowance for climate change); and
- sufficient span is provided to allow flows to be conveyed with minimal upstream effects on water levels relative to existing conditions.

The design and installation of the crossings and culverts will follow appropriate guidance from the following documents:

- CIRIA (1997). Culvert Design Manual - Report 168;
- SEPA, WAT-PS-06-02: Culverting of Watercourses – Position Statement and Supporting Guidance v2 (2015); and
- SEPA, WAT-SG-25, Engineering in the Water Environment Good Practice Guide – River Crossings (November 2010).

### 3.10 Cabling

The electrical output from the wind turbine transformers will be fed at 33 kV in series through underground cables to the wind farm control building, and then to the SPEN substation for step-up to 132 kV by transformer.

#### Design

Cable trenches will be designed to follow the line of site tracks where possible, typically offset 1.0 m to 1.5 m from the edge of the track. A typical trench cross-section is provided in Figure 3.7. Trenches may be dug wider to allow for double cables to be installed.

#### Cabling Installation

A trench of nominal size depending on single or double arrangements will be excavated and side cast to a length equivalent to the cable drum length. The cables will be laid in the required configuration using a cable drum attached to a 360 excavator.

As cable laying is being carried out, excavation will proceed ahead and on completion of cabling a surround of imported cabling sand will be introduced followed by backfill. Each cable will be overlaid by yellow warning tape. Cable marker posts will be installed every 250 m and at each change of direction and track crossing. Cable pits will be left open and temporary fencing erected to enable cable jointing to take place at a later date. The pits will be backfilled on completion of jointing and testing.

Water blocking of cable runs where a down slope is negotiated will be required at suitable intervals to prevent cable trenches acting as field drains.

The cables will be suitably protected with ducting where the runs cross the tracks. The cables will be pulled into the ducts which are positioned within the turbine base upstand and protected until such time they are terminated into the wind turbine switchgear.

Supervisory Control and Data Acquisition (SCADA) and earthing cables will be installed in the cable trench along with the 33 kV cables. The SCADA cables will be terminated to splice boxes/racks and then tested. The earthing cable will be installed in the cable trench and will provide a collective earthing system for the wind farm.

### 3.11 Turbine Foundations

Turbine foundations are expected to comprise of gravity-type foundations. This will be determined following review of ground investigation works and detailed design. The construction methodology is described below.

- Install suitable SuDS drainage system to prevent silt pollution to surrounding area.
- Strip and set aside existing vegetation as per the PMP.
- Strip and stockpile topsoil from the affected area in accordance with the PMP.
- Excavate subsoil and stockpile in accordance with best practice, locating away from drainage paths and buffer zones to minimise the possibility of silt pollution.
- Excavate to foundation formation level and lay engineering fill as required by the ground conditions. This will be done by laying and compacting crushed stone.
- Place blinding concrete to provide a level work surface for the fabrication of steel reinforcement cages.
- Lift steel reinforcement to formation level and fabricate cages.
- Place concrete shutters to lie level and place concrete for 1st phase pour.
- Strip shutters and set aside for re-use.
- Place concrete shutters to lie level and place concrete for 2nd phase pour (also known as the plinth or upstand).
- Strip shutters and set aside for re-use.
- Backfill foundation from stockpiled materials ensuring materials are replaced in layers encountered during initial excavation.
- Place topsoil to depths encountered during initial excavation.
- Replace turf where possible or reseed area with an approved seed mix.

The storage and movement of earthworks will be undertaken in accordance with the PMP, and with reference to 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra 2009)'.

An indicative drawing of a wind turbine foundation is provided in Figure 3.4.

### 3.12 Substation Control Building

The wind farm control room will be of masonry cavity wall structure with traditional pitched roof construction. Foundations are expected to be strip footings. Finishes for wall cladding, roof tiles, doors and windows will be agreed with SBC.

The general construction method will be as follows.

- The area of the substation and associated compound will be set out and the top soil stripped and removed to a temporary stockpile.

- Soil and turf storage will be in accordance with the good-practice measures described in the PMP.
- The building foundations will be excavated and concrete poured.
- Walls will be built up in blockwork from the footings to damp proof course level and the floor slab constructed. Ducts and tranches will be installed as required.
- Walls will be constructed to the appropriate level.
- Roof trusses will be lifted into position using an adequately sized mobile crane then felted, battened and tiled.
- Windows and doors will be installed to make the structure wind and water tight.
- Internal fit out of the building will be done, including wind farm switching and control panels and domestic services.

### 3.13 Turbine Works

Seven turbines are to be erected on site as shown in Figure 3.2.

The following describes the general method to be followed for turbine erection.

- Turbine components are transported to site in accordance with the Traffic Management Plan.
- Turbine components may be pre-delivered and offloaded at the crane hardstandings or temporary laydown areas.
- Turbine components will be lifted by adequately sized cranes (a main 750 tonne crane and smaller tail crane up to 500 tonne capacity) and positioned and fixed as required.
- Upon completion of the erection all bolts will be tightened and the internal fit out of the turbine undertaken.
- The site's 33 kV cable network will be connected to the turbine's switchgear.
- Turbine testing and commissioning will be undertaken by specialist engineers.

Adequate temporary lighting will be available for use after dark or in poor lighting conditions.

Upon completion of the erection of the turbines, the relevant records will be made available in hard copy, for review and incorporation into the project quality plan.

### 3.14 Maintenance

The track network will be subject to numerous heavy plant movements and consequently may deteriorate, develop potholes or ruts. Any areas which fail, suffer deterioration or rutting during construction will be restored as part of the ongoing maintenance obligation of the Principal Contractor.

### 3.15 Reinstatement

Reinstatement and restoration of the site will be undertaken as soon as practicable following the completion of each element. Following completion of construction works and when most heavy plant has left site, the contractor will undertake final restoration works.

Restoration works shall involve the removal and restoration of the temporary elements of the Proposed Development, for example the blade laydown areas and auxiliary crane pad areas. Temporary construction compounds would be reinstated.

Turves, peat and topsoil that was stripped and stored during construction shall be used in the reinstatement of these temporary areas.

### 3.16 Noise Management

The construction works will generate noise for a temporary period. The noise levels and duration will vary dependant on the activities being undertaken. The main sources of construction noise are the operation of large items of plant and equipment such as excavators, diesel generators, dumper trucks etc.

BS 5228-1:2009 *Noise control on construction and open sites* provides guidance on appropriate methods for minimising noise from construction activities. The aim of this outline CEMP is to ensure compliance with the "best practicable means", as defined in the Control of Pollution Act 1974.

The following measures will be put in place to minimise noise:

- site staff will receive appropriate environmental training at the beginning of the contract and throughout the construction;
- silencers or mufflers would be fitted to plant, tools and generators where practical;
- plant items will be properly maintained;
- when not in use, staff will be required to turn off vehicle engines and not leave them idling; and
- deliveries and construction activity will not be done outwith the site working hours specified in the planning conditions and this outline CEMP.

The Applicant will maintain contact with the local community council and respond to any concerns relating to noise. A log of complaints and actions taken to remedy these would be in place.

No formal noise monitoring is proposed but any excessive noise levels will be noted by the Applicant's site agent as part of their general site observations. This will be discussed with the Principal Contractor to ensure appropriate noise reduction measures are in place.

### **3.17 Change Management**

The Principal Contractor will maintain a Change Register that details where there has been a departure from the planning permission, the reasons for the change, details of the alternative approach and to keep a record of reviews and approvals. This shall include the Applicant and the ECoW/EnvCow, together with the Planning Authority where required. The alternative proposals shall only be adopted following consideration and acceptance of the Applicant, the ECoW and EnvCow

It is noted that material changes will require consultation with the Planning Authority and other consultees. Following any agreed changes, the Principal Contractor shall update method statements appropriately, to ensure compliance with the planning permission.



## 4.0 Site Waste Management Plan

### 4.1 Aims and Objectives

The Site Waste Management Plan (SWMP) for the Proposed Development shall outline the processes to be put in place to ensure the control of waste on site to minimise impact to the environment. The SWMP details waste reduction strategies and how waste shall be removed from site where necessary. Note that the SWMP does not cover peat as a waste material, or forestry waste, as these are dealt with by the PMP and FWMP, respectively.

The SWMP shall outline the responsibilities of the Principal Contractor and shall identify strategies to reduce, re-use and recycle.

The SWMP aims to realise the following benefits:

### 4.2 Waste Reduction Strategies

The Principal Contractor will employ the following strategy to achieve maximum reuse and reduction of landfill waste:

- The Principal Contractor's subcontractors shall be required to adhere to the SWMP.
- Waste management will be incorporated into the design process, including planning for high volumes of waste, consideration of suitable manufacturers and appropriate storage measures.
- The Principal Contractor will identify the types of waste to be generated on site and appropriate segregation.
- The Principal Contractor will identify opportunities to reuse and recycle where possible.
- The burning or burial of waste on site shall be strictly prohibited.
- Should any unauthorised waste disposal be identified, this shall be thoroughly investigated and appropriate corrective and disciplinary action taken.

### 4.3 Anticipated Construction Waste Streams

The Principal Contractor will identify all waste streams to be generated on the site and forecast expected volumes for each waste type.

A typical list of waste streams is as follows:

- Domestic-type waste from welfare facilities, e.g. food waste, paper, plastics, glass
- Sewage from welfare facilities;
- Concrete;
- Waste chemicals, fuel and oils;
- Packaging, typically plastics or paper
- Waste metals;
- Waste water from plant, vehicle and wheel washes; and
- Waste soils that are not suitable for re-use due, for example those contaminated

### 4.4 Waste Storage

Waste storage will be primarily at the construction compounds. All waste will be stored in appropriate clearly labelled containers, keeping the various waste streams separate to aid recycling efforts. Waste containers shall be covered to keep the waste dry and prevent it from escaping. The waste containers shall be regularly inspected to ensure there are no leaks and spills and they remain fit-for-purpose.

### 4.5 Waste Records

The Principal Contractor shall ensure that appropriate waste management records are kept, including:

- Copies of relevant permits and licences
- Contact details for all waste carriers and disposal sites.

- Inspection and audit reports.
- Actual volumes of waste disposed and recycled.
- Waste Transfer Notes (for hazardous waste).

#### **4.6 Monitoring**

The Principal Contractor will develop and implement a regular monitoring programme to ensure compliance with the SWMP. The ECoW or EnvCoW will regularly inspect the Principal Contractor's site waste management practices and records.

The Principal Contractor will undertake monitoring of the waste storage containers on a daily basis to ensure waste is being disposed of correctly, and no environmental issues are arising as a result of waste management.

The Principal Contractor shall ensure its operatives are suitably briefed and trained on the requirements of the SWMP.

## 5.0 Dust and Mud Management Plan

During periods of prolonged dry weather, there is a possibility that air quality will be impacted by airborne dust because of earthworks and vehicle movements. This Dust and Mud Management Plan (MP) identifies potential sources of dust emissions and the associated potential impacts and details the measures to be implemented at the site to reduce dust and particulate emissions.

### 5.1 Aims

The aim of the Dust and Mud MP is to:

- minimise the generation of dust and mud;
- minimise the nuisance caused to nearby receptors;
- outline a dust and mud minimisation strategy to be adopted by the Principal Contractor and site operator; and
- detail how the Dust and Mud MP will be monitored.

### 5.2 Sources of Dust Emissions

The following activities have the potential to generate dust on-site:

- vehicle movements;
- earthworks and handling of stockpiled material;
- wind blowing across material stockpiles; and
- crushing and grading operations at borrow pits.

Periods of prolonged dry weather and during strong winds bring the greatest potential for dust to be generated.

### 5.3 Sources of Mud

The following activities have the potential to generate mud on-site:

- vehicle movements, especially heavy plant;
- earthworks and handling of stockpiled material; and
- use of tracks prior to them being capped with clean stone.

Periods of prolonged wet weather bring the greatest potential for mud to be generated.

### 5.4 Mitigation Measures

A range of mitigation measures will be implemented by the Principal Contractor.

#### General Measures

- Site rules will be established and enforced.
- Machinery and dust and mud-causing activities will be located away from sensitive receptors where reasonably practicable.
- Material handling operations will be minimised, especially those most likely to cause the generation of dust.
- The Principal Contractor shall establish a regime of access track maintenance. Mud and sludgy material from the top of the tracks will be scraped away with a grader. Clean stone shall be added and compacted to create a clean running surface.

#### Construction Traffic

- All vehicles will switch off engines when not moving or working on-site.
- All road-going vehicles will comply with current emissions standards.
- Movement of construction traffic around the site will be minimised, where possible.
- Appropriate speed limits will be set around the site.

- Wagons will be covered if the load has the potential to generate dust.
- During periods of heavy rainfall, the Principal Contractor should consider pausing movement of heavy plant and earth-moving activities.
- Dust, mud and road cleanliness on routes to the main site access will be monitored. A wheel wash facility will be installed at the site compound and should it be deemed necessary, a road sweeper will be deployed.
- Material deliveries and vehicle access will be timed to avoid the need for traffic to queue.

#### Site Activities

- Dust generating activities will be minimised.
- Water will be used as a dust suppressant, where required. The water will be either re-used from the on-site drainage system/treatment ponds or brought in from off-site.
- Prolonged storage of debris on the site will be kept to a minimum.
- Completed earthworks and exposed areas will be covered or re-vegetated as soon as is practicable.
- Slopes of any stockpiles and mounds will be not greater than the natural angle of repose of the material. The stockpiles/mounds must not have sharp changes in shape.
- Suitable wetting of soil surfaces will be carried out during the earth moving activities to minimise soil loss through airborne dust, this may be done through the use of a water bowser, or static sprinklers.
- Hard surfacing of internal roads will be completed as soon as practical to aid in minimising dust re-suspension.

## 5.5 Monitoring

Regular visual inspection of areas near the work site will be conducted to assess the build-up of dust and mud. Observations will be recorded in site diaries and EnvCoW reports. Staff on-site will be encouraged to be vigilant and report any excessive dust emissions to the site manager, or any areas where there is a build-up of mud.

Plant will be subject to daily inspection and cleaned down as required to prevent the build-up of dust and mud.

Where dust or mud is identified as an issue, the Principal Contractor will undertake an investigation to determine the cause and to assess which mitigation measures should be put in place. Where a site activity is identified as being the source and implemented mitigation measures have failed, the operation identified as the source will be ceased until a remedial measure has been found.

## 5.6 Operational Phase

The measures described above relate primarily to the construction phase of the development, as this is when there is the greatest potential for dust and mud to be generated. During operations, there would not be expected to be any issues with mud, but dust would continue to be an issue requiring management. The main source of dust will be from vehicles driving on site tracks during dry conditions. The receptors would be the same as during construction. The following measures will be put in place.

- Following construction, the site will be reinstated to ensure that areas subject to earthworks have been revegetated – this will reduce the potential for dust generation.
- Appropriate speed limits will be set around the site.
- Vehicles will not be left idling on site.
- Dust levels will continue to be monitored as part of site inspections.
- Mitigation measures will be put in place as appropriate.

## 6.0 Drainage Management Plan

### 6.1 Introduction

This section provides a DMP for the site. This DMP has been developed in line with Guidance for Pollution Prevention 5, SEPA's The Water Environment (Controlled Activities) (Scotland) Regulations 2011, Good Practice during Wind Farm Construction and the Forest and Water Guidelines.

The DMP details the methods to be utilised, and the good practices to be followed, to alleviate the risk of discharge of contaminants from the wind farm, during construction and operation, to watercourses. This is achieved by use of water management practices and facilities designed to drain surface water in a sustainable manner.

The conceptual drainage system takes the drainage from the site to attenuation and treatment features before being discharged to ground or watercourses/waterbodies. The DMP does not dispense with the need for good pollution prevention practices on site. A PPP has been included as part of the outline CEMP.

The DMP will be provided to contractors to ensure compliance not only with planning requirements but also environmental and other legislative requirements.

### 6.2 Aims and Objectives

The key objectives of the DMP are:

- to protect the natural watercourse catchments and the local biodiversity interests;
- to keep clean water separate from polluted run-off;
- to ensure the treatment of polluted run-off before it is returned to the surface watercourses;
- to not exacerbate flood risk;
- to develop a robust plan that will be initiated at the design stage but will evolve with the construction works, to ensure a proactive approach rather than reacting to extreme events; and
- to monitor and review the environmental impact of the construction work and update the management plan as necessary.

### 6.3 Compliance with the DMP

It is the intention that all works carried out by the Principal Contractor on the site will be conducted in accordance with this DMP and accompanying approved method statements. Where:

- there is any departure from an approved method statement; and/or
- any tasks/works/operations are being done without an approved method statement; and/or
- monitoring of the surface waters (as described in the GSWMP) indicates elevated levels of specified contaminants; and/or
- pollution of surface or ground waters is, in the opinion of the ECoW, imminent or threatened

then the Applicant will be entitled to prescribe such action(s) (including immediate cessation of the relevant tasks/works/operations) as considered necessary to prevent pollution of surface or groundwater.

### 6.4 Method Statements

A series of method statements will be prepared by the nominated contractor for submission to and approval by a nominated representative of the Applicant.

#### Objectives

The objectives of the individual method statements are to outline how specific tasks will be done. It will be essential that these include for the management surface water run-off from the developed site by providing flow attenuation, water treatment and controlled discharge or dispersal.

**Process**

Separate method statements will be developed proactively for each type of infrastructure / activity associated with construction and operation of the Proposed Development.

The water treatment elements required for each type of infrastructure / activity are to be implemented and commissioned prior to any works commencing.

Each method statement will.

- Outline the drainage management measures to be installed prior to construction.
- Provide a location map or alternative adequate description.
- Contain a list of equipment to be provided.
- Provide a programme to implement the method statement.

No works will be carried out until approval is obtained for each method statement. The Principal Contractor must demonstrate, to the satisfaction of the Applicant that in working to the agreed method statements, any discharges and run-off will be suitably controlled and treated.

**Design**

The method statements will follow the recommendations within section 226.12 General Principles and include for the incorporation of any new best practices or guidance where practicable during the period of construction.

Each method statement will detail treatment and reduction measures for the storm water run-off generated on the site, provide for on-site control of run-off where appropriate, and optimise the location of storm water management facilities.

**Good Practices**

The following good practices will be followed and included for in the method statements.

- Existing drainage paths will be mapped and temporary drainage designs issued for review/approval and implemented prior to works commencing within specific catchment areas.
- Natural drainage patterns will be maintained.
- Drainage elements will be modified in specific locations to address the local characteristics. The choice and feasibility of appropriate SuDS measures will be dependent upon the local topography, the proposed infrastructure layout and the sensitivity of the receiving watercourses.
- The drainage system will be designed to treat and attenuate suitable sub catchment run-off volumes.
- Works will have no negative net impact on flood risk either to land adjacent to the constructed elements or downstream.
- Small scale multiple drainage features will be utilised across the site.

## 6.5 Foul Drainage

**Temporary Accommodation**

For the duration of the construction phase, the welfare facilities at the temporary accommodation will drain to sealed tanks. These will be regularly emptied by a licensed waste carrier. Alternatively, a septic tank and soakaway may be used.

On completion of the site works all cabins, tanks and foul drainage infrastructure will be removed from the area and the compound location reinstated.

**Permanent Accommodation**

The welfare within the control building will drain to a septic tank in accordance with the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (CAR).

## 6.6 Prevention Measures

This section details the general drainage measures which will be included in the method statements, as appropriate, to remove and or alleviate the identified pollution risks.

**Watercourse buffers**

Construction near watercourses will be undertaken in accordance with GPP5 (SEPA et al) *Works and maintenance in or near water*. No work will be undertaken within a 50 m buffer area from watercourses with the exception of crossing points and associated track. Buffers as identified within the EIA Report will be maintained throughout the construction works.

**Flood Risk**

Flood risk will not be exacerbated. The following measures will be adopted:

- flows will be released via overland outfalls, to avoid direct discharges to watercourses; and
- if discharge to a watercourse is unavoidable, ponds will be used to provide attenuation and moderate flow rates.

**Pollution Prevention**

Relevant pollution prevention measures and practices will be incorporated into the method statements.

**Timing**

New ground excavation works will be restricted during heavy rainfall events to minimise the creation of sediment-laden surface run-off and weather forecast information will be utilised to plan the timing of excavation works, as practicable.

**Erosion**

To prevent erosion, all new crossings, pipe culverts and cross drains will:

- be appropriately sized to match the local hydrological conditions;
- be designed and built to ensure no hanging outfalls;
- include splash protection (stone/riprap) at outfalls; and
- be designed and built with shallow gradients to match the natural bed gradients.

## 6.7 Methods of Water Separation

**Clean Water**

Clean water will be separated from any site run-off by the following.

- Maintain the existing natural hydrology.
- Install temporary cut-off drains to divert clean waters away from potentially polluting activities.
- Pass surface waters through culverts (of suitable size and gradient and installed flush at inflow and outfall) under and through the construction footprint.

**Site Run-off**

Run-off will be reduced and separated from clean water by the following.

- The majority of the access tracks will be served by swales (vegetated as part of re-instatement works during construction) or ditches adjacent to the track which will act both to intercept run-off from adjacent land and collect run-off from the track.
- Direct polluted waters to settlement ponds, sumps, silt busters and flocculent tanks (subject to SEPA approval).
- Install trackside drains and soakaways where practicable.
- Camber track (or build in a cross fall) to direct drainage to roadside drainage to reduce sheet flow and potholing.
- Install infrastructure drainage and treatment prior to any excavation or construction.

## 6.8 Methods of Treatment and/or Attenuation

The following short-term methods will be considered should conditions dictate their requirement.

- Straw bales, geotextiles and/or turves will be placed temporarily within the swales/drainage ditches at regular intervals. These bales and turves will be removed and replaced with permanent stone filters once the water quality has stabilised.
- Baffles/weirs will be formed through the provision of vertical posts driven into the ground supporting timber cross members at bed level. These timbers will provide upstream and downstream support to baffle structures which it is anticipated at construction stage will comprise regularly replaced hay bales to maximise filtration.
- Once stabilisation has occurred, the hay bales will be replaced with rock infill to enhance the robustness of the structures and reduce the subsequent maintenance burden.
- Stone check dams faced with a layer of geotextile will be constructed at critical points along the drainage ditches (single-sized aggregates 5–10 mm will be used as a filter). Small sumps will be formed intermittently between the check dams to reduce the amount of suspended solids contained in the water.
- Track drainage, designed to prevent the build-up of large volumes of water, will be porous and act as soakaways thereby preventing any direct discharge to watercourses.
- Buffer zones will be employed to avoid sediment reaching watercourses.
- The use of water bars will be considered across constructed tracks to prevent ruts and ponding on steeper sections of track.
- Settlement ponds where required will be installed to allow fines to settle out, weirs and silt fences will be utilised at inflows and outflows to reduce water velocity and allow settlement.
- Silt traps will be located at the end of cross drains, cut-off drains and where tracks are required to cross existing drains/streams in areas of high or moderate erosion risk. Silt traps will be employed at all water-crossings.
- Multi-celled settlement lagoons or tanks, which retain contaminated water long enough for silt to settle out, will be installed for sections with high levels of fines, and in areas where the level of run-off is likely to exceed levels normally contained within a silt trap;
- Settlement lagoon or tank features will where appropriate:
  - minimise the inlet flow as much as possible by using energy dissipaters or rip rap;
  - include a lined inlet chamber to reduce velocity of flow;
  - have the inlet chamber and outlet weir lined with materials like geotextiles, polythene or timber;
  - have a long outlet weir to minimise disturbance;
  - include two or three lagoons in series to increase silt retention;
  - have the inlet chamber cleaned regularly; and
  - have the discharge quality monitored frequently.
- For sections with space restrictions mobile silt buster equipment may be utilised.
- For sections with space restrictions and high levels of fines mobile flocculent tanks and chemicals will be utilised (subject to agreement with SEPA).

The following long-term methods will be considered should conditions dictate their requirement.

- Where swales/drainage ditches exceed the recommended gradients to achieve such treatment as defined in the SuDS Manual (C753), baffles will be provided along the route of the channel.
- The roadside drains will be filled in with coarse rock material post construction, to act as filter strips or infiltration trenches (a shallow excavated trench backfilled with stone to make an underground reservoir), where appropriate.
- Outfalls from SuDS ponds will be controlled to achieve required retention times, and during construction a temporary underflow baffle arrangement will be adopted to ensure any materials, and specifically any accumulation of hydrocarbons or scum that may arise through accidental spillage, are retained within the ponds and can be skimmed off and disposed of in an acceptable manner without directly discharging to the watercourse, where appropriate.



- In addition to the foregoing, a shut off facility at each pond will be provided to permit the ponds to be isolated from adjacent watercourses in the event of significant contamination risk.

## 6.9 Maintenance

The drainage system will be maintained for the lifetime of the Proposed Development. Maintenance will include, where appropriate:

- regular checks of the drainage system for blockages;
- regular checks of the drainage system for performance;
- regular sediment removal from silt traps and settlement ponds; and
- maintenance will be carried out in periods of dry weather where possible.

An ongoing review of the maintenance strategy will be undertaken as it is likely demands will change as vegetation becomes established and as vehicle movements reduce post construction, to normal operating conditions.

## 6.10 Monitoring

The GSWMP included in this outline CEMP will be implemented and managed by the designated ECoW to provide feedback on drainage performance and effectiveness.

## 6.11 Contingency Plans

Contingency plans are detailed within the PPP included in this outline CEMP.

## 6.12 General Principles

This section includes a summary of general drainage management features to be included in the contractor method statements.

### Cut-off Ditches

- Install cut-off ditches to ensure separation of clean water from polluted water.
- Ensure cut off ditches have weir features installed at regular intervals (bales/stone weirs) to reduce velocity (to avoid any erosion issues).

### Trackside Drains

- Excavate trackside drains on upslope side of access tracks.
- Ensure trackside drains have weir features installed at regular intervals (bales/stone weirs) to reduce velocity (to avoid any erosion issues).
- No trackside drains are to be connected directly to surface watercourses.
- Minimise length and extent to avoid concentrating large volumes of water.
- No diverting water into adjacent catchments.
- Install regular cross drains to avoid large build ups of water – link cross drainage to existing down slope flow paths or treatment and attenuation facilities.

### Treatment

- Polluted water drainage will be directed towards a series of settlement ponds and treatment will include multi-cell lagoons, silt busters and/or flocculent tanks (subject to agreement with SEPA).
- Fuel and oil spill treatment measures to be installed and spill kits available.
- Size treatment/attenuation features according to sub catchment run-off volumes and attenuation requirements.
- Pumping of water from trenches will be to adjacent vegetated plots.
- Pumping operations will be supervised to ensure water is soaking away and direct run-off to watercourse is not occurring.

### Return to Surface Waters

- Install soakaways – check groundwater conditions.

- Install weirs on settlement features with suitable spill level to surface waters.

**Maintenance**

- Ensure the controlled release of clean water followed by the regular removal of silt from features after pollution and or storm events.
- Remove any blockages.
- Regularly inspect and maintain to ensure effectiveness of installed features.

## 7.0 Pollution Prevention Plan

### 7.1 Introduction

This section provides a PPP for the site, incorporating a Pollution Incident Plan (PIP).

### 7.2 Aims and Objectives

The aim of this PPP is to ensure that measures are taken to avoid potential risks to water quality, particularly within the River Tweed catchment. It covers pre-construction, construction, and operational phases of the Proposed Development.

The key objectives of the PPP are to:

- identify all pollutant sources and sensitive receptors;
- identify, construct and implement any special procedures or control measures to protect the environment;
- implement a management plan to include waste management and incident response; and
- monitor and review the environmental impact of the construction work and update the management plan as necessary.

There are two specific elements to the PPP.

- 1) PPP
  - This details procedures to be followed by the Applicant during construction and operation in order to prevent any adverse effects on the quantity and/or quality of controlled waters on the site (as hereinafter defined).
- 2) PIP
  - This details emergency response arrangements in the event of an on-site incident.
  - NB An on-site incident is defined as an event which has the potential to directly or in-directly affect the quality or quantity of ground or surface waters within the site.

### 7.3 Duration

The PPP will be adhered to for the duration of pre-construction, construction works and site operation.

### 7.4 General Principles

The following mitigation measures will be adopted throughout the construction phase to mitigate against pollution events.

- An ECoW and EnvCoW will be employed during the construction of the wind farm.
- Many of the potential construction impacts have been addressed in the design and layout of Proposed Development's infrastructure, by avoiding certain features, such as watercourses, where possible, and observing appropriate buffer zones. However, construction activities still have the potential to cause pollution of the water environment, if appropriate mitigation measures are not incorporated into the construction phase.
- During the contractor tendering process for the construction works, environmental specifications and objectives will be included in the tender documents so that all contractors can allow for mitigation measures in their tender costs. In addition, the use of the construction contract conditions as recommended by SEPA Special Requirements for Civil Engineering Contracts for the Prevention of Pollution V2 (2006) will be applied.

### 7.5 Chemical Pollution

Measures to prevent chemical pollution will include.

- Storage – all equipment, materials and chemicals will be stored within the site compound area. Chemical, fuel and oil stores will be stored on impervious bases within a secured bund of 110 % of the storage capacity.

- Vehicles and refuelling – standing machinery will have drip trays placed underneath to prevent oil and fuel leaks causing pollution to surface water and groundwater. Where practicable, refuelling of vehicles and machinery will be carried out on an impermeable surface in one designated area, well away from any watercourse or drainage systems.
- Maintenance – only emergency maintenance to construction plant will be carried out on-site and will preferably be carried out in one designated area on an impermeable surface well away from any watercourse or drainage, except where vehicles have broken down necessitating maintenance at the point of breakdown.
- Toilet facilities – on-site toilet facilities will be adequately designed and maintained to ensure all sewage is disposed of appropriately (see DMP).
- Cement and concrete – wet concrete operations will not be carried out within watercourses or close to watercourses unless specifically for the construction of new watercourse crossings or upgrading of existing watercourse crossings.
- A buffer zone of 50 m will be maintained between all construction activity and watercourses.
- The requirements of Control of Substances Hazardous to Health (COSHH) Regulations will be followed at all times.

## 7.6 Run-off, Erosion and Sedimentation

Measures to prevent run-off and sediment laden water entering watercourses will include.

- New ground excavation works will be restricted during heavy rainfall events to minimise creation of sediment laden surface run-off, and weather forecast information will be utilised to plan the timing of excavation work.
- Exposed ground and soil stockpiles will be minimised in extent, and reinstated/covered over at the earliest possible opportunity.
- No concentrated loads, such as soil stockpiles, will be stored on steep slopes where the potential for land slippage is greatest. Excavated material will be transported to stable ground located away from nearby watercourses.
- Buffer zones, silt traps and settlement ponds will be used to avoid sediment reaching watercourses.
- Potential pumping of water from turbine bases will either be to areas of ground capable of absorbing the water or to settlement ponds. Pumped water will not be discharged directly into surface watercourses under any circumstances.
- Cabling across watercourses will be avoided where possible in the design process. Where unavoidable, cable crossings will be undertaken using recognised construction techniques to minimise disturbance to watercourses. Construction near the watercourse will be undertaken in accordance with GPP5 (SEPA et al) Works and maintenance in or near water.

## 7.7 Compliance with Pollution Prevention Plan

All works carried out on the site will be conducted in accordance with this plan and accompanying approved method statements.

Where:

- there is any departure from an approved method statement; and/or
- any tasks/works/operations are being done without an approved method statement; and/or
- monitoring of the surface waters indicates elevated levels of specified contaminants; and/or
- pollution of surface or ground waters is, in the opinion of the ECoW, imminent or threatened.

The Applicant will be entitled to prescribe such action(s) (including immediate cessation of the relevant tasks/works/operations) as considered necessary to prevent pollution of surface or groundwater.

## 7.8 Pollution Prevention Plan

The PPP presents a tabulated summary of the specific site activities that may impact on the quality of the surface waters within the site during the construction phase. In addition, the PPP includes site procedures and mitigation measures, which contractors must adhere to on an ongoing basis.

Other guidelines which should be followed include SEPA Pollution Prevention Guidelines and other relevant guidelines as listed in the outline CEMP.

## 7.9 Pollution Prevention Measures

The likely forms of pollution during construction are likely to be:

- silt;
- cement;
- chemicals used in construction; and
- waste materials.

The PPP includes specific activity/task method statements to address these forms of pollution.

## 7.10 Method Statements

A series of method statements will be prepared by the appointed contractor for submission to and approval by a nominated representative of the Applicant. The method statements will comply with the requirements of this outline CEMP. Separate method statements will be prepared for every pre-construction/construction task and/or any other operations which have the potential to give rise to pollution of surface or ground water.

Each method statements will:

- outline how the specific task will be carried out, including pollution mitigation measures;
- provide a map or alternative adequate description of its location;
- contain a detailed risk assessment of each task;
- contain a list of pollution prevention and control equipment to be provided;
- indicate the location at which this equipment will be stored;
- identify communications procedures; and
- provide a timetable.

The Principal Contractor must demonstrate, to the satisfaction of the Applicant that in working to the agreed method statements, any discharges and run-off will be suitably controlled and treated.

## 7.11 Training

Pollution prevention training will be provided by contractors to site-personnel as a pre-requisite to working on the site. As a minimum this will include:

- the requirements and use of the PPP and PIP;
- key risk activities and sensitive areas;
- the client / contractor communication system;
- incident reporting plan / form;
- site personnel responsible for dealing with site incidents; and
- use of spill kits.

A training log will be maintained specifying names of attendees, date of and contents of each training session.

The Contractor will ensure that any person found to be inadequately trained, or to be disregarding the terms of the PPP and/or the PIP is immediately disciplined, with further breaches leading to the personnel being expelled from the site.

## 7.12 On-Site Equipment and Containment Areas

Pollution prevention and spill containment equipment will be provided at strategic locations prior to the commencement of each phase of activity.

Refuelling will be undertaken on an impermeable and bunded surface within the construction compound. Alternative refuelling locations will only be approved if the Applicant is satisfied that sufficient pollution prevention measures are included. No refuelling points will be established without such approval.

## 7.13 Monitoring Plan

A GSWMP will be implemented and managed by the EnvCoW. The proposed GSWMP is contained within the outline CEMP.

## 7.14 Environmental Checklist

An environmental checklist will be used to monitor and plan construction activities. The checklist will include.

- Weekly visual inspections (as part of the GSWMP) to ensure that silt run-off is being managed as required.
- Recording of all required environmental actions.
- Planning of construction activities, by the Principal Contractor, in accordance with a three day weather forecast. This will allow construction activities to avoid periods of heavy rainfall wherever possible.
- Plans for pollution prevention, by the Principal Contractor, in the case of unexpected adverse weather conditions.
- Details of peat and vegetation storage area management, by the Principal Contractor, to prevent adverse environmental effects (in accordance with the PMP included in this outline CEMP).

## 7.15 Pollution Incident Plan

### Emergency Response

The PIP includes emergency response arrangements to be followed in the event of an on-site incident potentially impacting a watercourse. Its purpose is to ensure:

- that the Applicant is aware of any incidents at the earliest possible time;
- that entry of pollution to watercourses is minimised and controlled, and to allow for the implementation of the Applicant's emergency planning response; and
- that in the event of an incident within these catchments arrangements are made to contact the SEPA emergency number, and report the incident.

The PIP will also be used to address any potential surface water risks within the area of the development.

Other guidelines which should be followed, to mitigate environmental damage, are GPP5 (SEPA et al) Works and maintenance in or near water.

## 7.16 Level of Response

The Principal Contractor will procure that any incidents are immediately assessed in consultation with the ECoW. An immediate judgement is therefore required as to the level and seriousness of any incident and the actions to be taken as a result.

A flow chart (see Figure 1) has been designed to offer a quick guide to site personnel to determine the level of response and reporting mechanisms in the event of a spillage or run-off occurring. A table of actions to be taken follows in Figure 2.

### Record of Incident

In the event of an incident and after completion of any clean-up operation an incident report form will be completed and filed on site, with copies sent to the EnvCoW, the Applicant, and SEPA as necessary.

Figure 1 - Incident Response Flowchart

**Determination of Actions in Event of On-Site Pollution Incident**

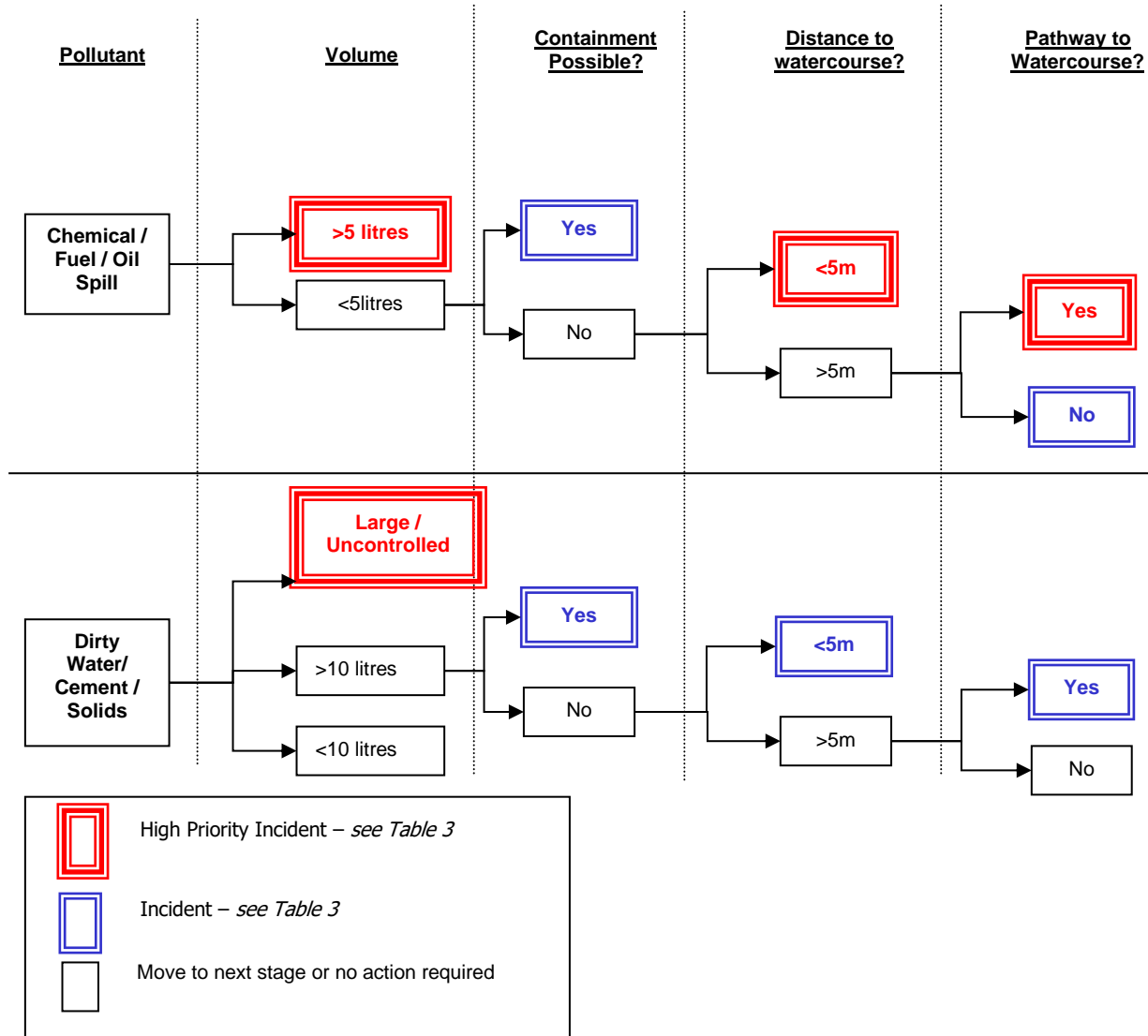
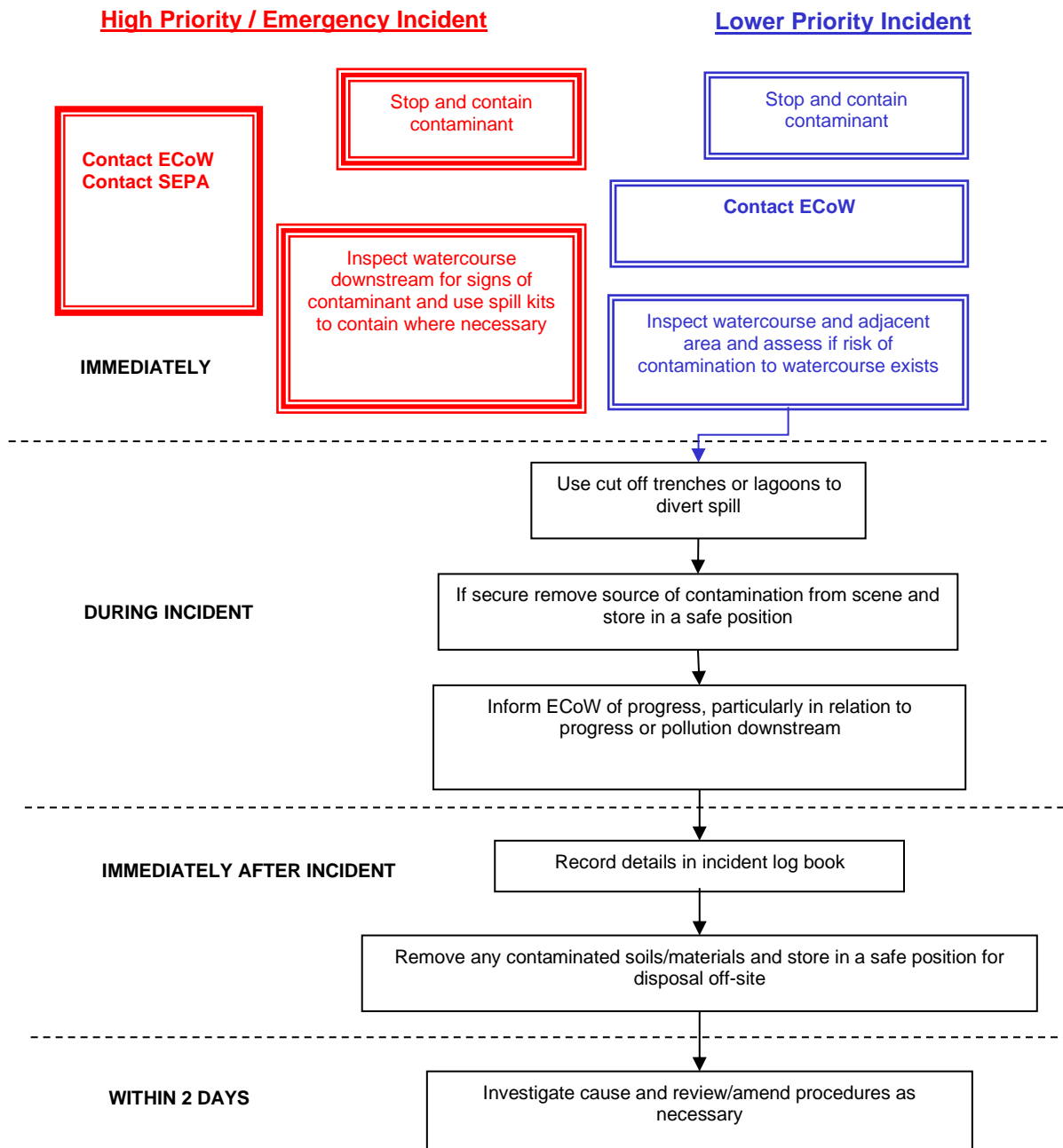


Figure 2 - Pollution Incident Response

**Action to be Taken in Event of an On-Site Pollution Incident**





## 8.0 Ground and Surface Water Monitoring Plan

### 8.1 Introduction

The GSWMP describes a plan to monitor water quality during the construction of the Proposed Development and outlines procedures for dealing with pollution. It should be implemented alongside the other elements of this outline CEMP.

### 8.2 Aims and Objectives

The GSWMP aims to ensure that the chemical water quality of the watercourses in the site boundary is appropriately monitored.

The GSWMP provides a methodology for gathering baseline data and ongoing information with regards to the water environment. This will provide a means for assessing the effectiveness of the DMP and PPP in protecting the environment. The monitoring will also allow pollution incidents to be identified and responded to.

### 8.3 Groundwater

#### Background

The groundwater body underlying the site is Peebles, Galashiels and Hawick, classified by SEPA as having an overall condition of "good"<sup>1</sup>.

#### Monitoring

Post-consent, a ground investigation campaign will be undertaken. Following the ground investigation work, standpipes will be installed in the boreholes to allow for groundwater levels to be monitored at each turbine location. This information will help to inform the geotechnical element of the turbine foundation design. The standpipes will be monitored once following installation and a further round of monitoring will be undertaken once groundwater levels stabilise. This will be done with a dip meter and recording the results, together with any other relevant observations such as weather conditions.

No sampling or other chemical analysis is proposed on the groundwater.

Once turbine foundation design is complete, there is no requirement to continue monitoring. The turbine foundation construction will involve the infilling of the standpipes.

#### Private Water Supplies

Land Use Planning System SEPA Guidance Note 31 (2014) states that potential risk to groundwater abstractions must be assessed within 250 m of excavations. Refer to Technical Appendix 10.3.

### 8.4 Surface Water

#### Pollution Sources

There is potential to impact on the water environment during construction, with the following contaminants the most likely to arise:

- suspended solids; and
- chemicals, such as oils, fuels and cement.

Various mitigation measures are described in this outline CEMP to ensure the water environment is not adversely impacted. Good practice guidance such as GPP5 (SEPA et al) Works and maintenance in or near water and CIRIA C532: Control of water pollution from construction sites (2001); will be followed.

#### Visual Inspections

During every sampling visit, a visual inspection of the watercourse will be undertaken. These observations will record the weather conditions, flow conditions, turbidity and any evidence of pollution. In addition to this, watercourses in close proximity to construction operations will be inspected at least once per week until the potentially polluting construction activities are complete.

<sup>1</sup> SEPA Water Environment Hub: <https://www.sepa.org.uk/data-visualisation/water-environment-hub/>, Accessed May 2024

### Water Quality Monitoring

Water quality will be assessed through sampling and subsequent laboratory analysis of water samples, with some parameters being measured in-situ.

In-situ measurements will record the pH, electrical conductivity, temperature, dissolved oxygen levels, turbidity, oxidation-reduction potential, together with the visual observations noted above.

Samples will be taken from the upper-middle water column, which ensure that surface film and bottom sediments are avoided. The samples will be sent for laboratory analysis which will record.

- pH.
- Total dissolved and suspended solids.
- Biological and chemical oxygen demand (BOD and COD).
- Dissolved organic carbon.
- Metals and ions (cadmium, calcium, chromium, copper, iron, lead, magnesium, manganese, nickel, and zinc).
- Naturally occurring hydrocarbons e.g. Total Petroleum Hydrocarbons (TPH).
- Alkalinity.
- Dissolved organic acids.

### Sampling Procedure

All samples will be collected by the ECoW or a suitably experienced consultant using containers which are compatible with the proposed laboratory analysis. The laboratory will provide all containers, which will be sterilised and sealed prior to delivery. The container labels will be clearly labelled on-site with water-resistant labels, noting sample name and date.

The samples will be collected as far from the bank as practical. Should the sampler need to enter the watercourse, they will collect samples from upstream. The sample will be taken in an open-mouthed container from the upper-middle water column, which avoids bottom sediment and surface film. In-situ measurements will be taken. The samples will be stored in sealed, chilled, cooler boxes until they are shipped to the laboratory, which will be done within 48 hours of collection. All samples will have attached laboratory-specific chain of custody documentation.

## 8.5 Surface Water Monitoring Strategy

### Monitoring Team

The monitoring will be undertaken by the EnvCoW or a specially commissioned consultant. The individual must have experience of conducting field sampling of the water environment. The designated sampler will undertake the following tasks:

- monthly collection of water samples;
- monthly visual inspections;
- maintaining records of lab results;
- interpreting lab results; and
- investigating any pollution incidents.

Additional visual observations will be undertaken, at a frequency of at least one per week, by the Applicant's site agent and the EnvCoW.

### Monitoring Equipment

The following equipment will be used for surface water monitoring

- Hand-held probes for in-situ measurements.
- Global Positioning System (GPS) for recording monitoring location.
- Camera for photographing monitoring location.
- Stake or other marker to identify monitoring location.
- Sample bottles and other equipment.

### Monitoring Locations

The focus of the monitoring scheme is on watercourses at highest risk of pollution due to their proximity to construction activity.

The monitoring locations will be agreed with consultees post-consent. The monitoring locations will be marked with a stake for the duration of the monitoring campaign to enable easy identification. A photographic survey of each location will be undertaken to further aid location identification.

### Monitoring Programme

Prior to the start of construction, surveys will be undertaken for a period of three months to establish baseline conditions. During the construction phase, monitoring will happen at a frequency of once per month. This is likely to involve approximately 18 sampling rounds.

## 8.6 Reporting

Upon completion of the three-month baseline monitoring, a report will be prepared to detail the monitoring locations, interpretation of the laboratory results and a description of the uncontaminated background pollution levels for the site. The results will be compared against the prevailing Environmental Quality Standards (EQSs). The Scotland River Basin District (Standards) Direction (2014) will also be referenced to allow any changes to the chemical status under the Water Framework Directive to be detected.

Site visit logs will be kept detailing the following:

- locations inspected, at what date and time;
- weather conditions at the time of inspection;
- watercourse observations: depth, flow rates, clarity, colour;
- evidence of any pollution; and
- records of the in-situ measurements.

The laboratory sample analysis will be referenced against the field observations and used to support interpretation of the results. The report will include commentary on the comparison against the baseline and previous monitoring rounds.

Any recorded pollution incidents will be provided by the ECoW and these will be noted in the report. Should the results differ significantly from the baseline or previous visits, attempts will be made to interpret the reasons for this.

The monitoring results will be provided to SBC as required by the planning conditions, should the Proposed Development receive consent.

## 8.7 Pollution Incident Response

This outline construction phase. Should pollution be detected during a monitoring visit, the ECoW will do the CEMP includes a PPP which outlines the mitigation measures to be applied during day-to-day construction activities to reduce the risk of pollution events occurring. The PPP also includes the procedure to be followed in the event of a pollution incident in the PIP. These plans should remain in force throughout the following.

- Alert the site manager.
- Follow the contamination upstream to try and find its source.
- Determine the extent of the pollution and whether it is ongoing.
- If the source is from construction activity, this should be discussed with the contractor and Applicant to agree remedial action.
- Additional water sampling may be undertaken to assist in determining the extent of the pollution.
- The findings should be recorded through field notes and photographs, together with notes to explain the follow-up actions undertaken.
- Significant events must be reported to SEPA.

## 8.8 Emergency Response

Upon identification of the pollution source, the Applicant will implement emergency measures. These will be appropriate to the situation but could include the following.

- Stop the pollution source being released through:
  - isolation or relocation (for example, in the event of leaking equipment);
  - pumping settlement ponds which may be overflowing; and
  - repairing bunds or drainage channels which may be allowing contaminants to escape.
- Deploy spill-kits.
- If necessary, stop work until the issue has resolved.
- Undertake a thorough post-incident review to understand if procedures or working practices need to change to prevent re-occurrence.
- Update SEPA as necessary.

## 9.0 Forestry Waste Management Plan

### 9.1 Introduction

The FWMP describes a plan to manage forestry waste to be generated during the construction of the Proposed Development.

### 9.2 Aims and Objectives

The FWMP aims to ensure that there are appropriate measures in place to minimise the environmental effects arising from the felling works for the Proposed Development, in accordance with the following hierarchy:

- Reduce waste volumes through maximising the proportion of timber that is extracted and sold to market.
- Re-use of stumps and brash shall be incorporated into the construction where possible (for example, under floating roads)
- Other recovery methods for brash and stumps shall be investigated by the Principal Contractor, for example composting or biomass markets.

### 9.3 Guidance

The forestry operations will be managed in accordance with the environmental principles contained within the UK Forest Standard and the UK Woodland Assurance Scheme.

Forest Industry Safety Accord (FISA) guidance will be followed during felling and extraction of timber.

### 9.4 Strategy for Forest Waste Management

The Principal Contractor shall seek to minimise production of waste by maximising the volume of material that can be sold to timber markets. All timber with a stem diameter greater than 7 cm should be removed from site. There may be some unrecoverable timber which becomes buried as brash mats are laid for forestry plant access.

Stump waste shall be minimised by cutting stumps as close to the ground as practical. Stumps and brash shall generally be left in-situ to avoid the ground disturbance associated with their removal.

### 9.5 FWMP Content

The Applicant will prepare a detailed FWMP in advance of felling works commencing on-site. The FWMP will detail:

- the felling phases to be followed;
- the harvesting and extraction methods to be followed;
- a timber transport management plan;
- methods to minimise wind blow risk;
- pollution prevention methods;
- COSHH treatment;
- pollution monitoring;
- forestry residue management, specifically relating to brash and stumps;
- protection of the water environment; and
- watercourse crossing procedures.

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