



# **Construction Environmental Management Plan (CEMP) Outline Draft**

## **Sandwater Road**

# CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

## SANDWATER ROAD

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# CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Sandwater Road



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## PART 1 – CONSTRUCTION ENVIRONMENTAL MANAGEMENT

### 1 INTRODUCTION

#### 1.1 Construction Environmental Management: Aims & Objectives

- 1.1.1 This document provides information on Environmental Management and details on Construction Methods (Part 2 of this CEMP) for construction of Sandwater Road. This document has been prepared for the Planning Authority and statutory consultees, outlining the proposed management method to be employed during the construction of the proposed Sandwater Road.
- 1.1.2 The principal objective of this document is to provide information on the proposed infrastructure and information on how Viking Energy Wind Farm LLP (VEWF) (the *Employer*) intend to avoid (where possible), minimise and control adverse environmental impacts associated with the development. Furthermore, this document aims to define good practice as well as specific actions to be implemented following receipt of a planning consent.
- 1.1.3 The information contained within the CEMP will form part of the Civils Works Contract. The methods and principles contained herein, as well as within referenced legislative instruments and published guidance documents, are adhered to by the *Contractor* in developing the detailed design, construction method statements and other plans relating to environmental management as required by the Planning Consent Conditions or Civil Works Contract.
- 1.1.4 The *Contractor* submits all relevant information as detailed in this document to the *Employer* for acceptance in accordance with the contract provisions. No works commence prior to the *Employer's* acceptance.
- 1.1.5 The *Employer* provides an updated CEMP to the Planning Authority post-consent / pre-works (CEMP v1.1). The *Employer* provides the *Contractor* with an electronic copy of the CEMP v1.1 which the *Contractor* develops and maintains for the duration of the works (CEMP Version 2.0).

#### 1.2 Roles, Responsibilities and Structure of the CEMP

- 1.2.1 The *Contractor* appoints an appropriately competent person or persons (*Contractor's* Site Environmental Representative) to undertake relevant environmental tasks as detailed in this document prior to, during and upon completion of the construction works. It shall be assumed that the role will be a full-time role and the relevant person will be based on site unless otherwise agreed by the *Employer* prior to commencement of construction.
- 1.2.2 The *Contractor* demonstrates the competence of the Site Environmental Representative to the *Employer* via submission of relevant information (e.g. CV, training records, membership records) for acceptance prior to commencement of construction works.
- 1.2.3 The *Contractor* is responsible for obtaining all necessary consents, licences and permissions<sup>1</sup> for his activities as required by current legislation governing the protection of the environment.

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<sup>1</sup> For example, discharge consents, abstraction licenses, Waste Management License (WML) Exemption, Permission, notification or consent for road closure, opening or diversion.

- 1.2.4 A copy of this document and related files and documents will be kept in the site offices for the duration of the site works and will be made available for review at any time. Upon completion of the construction works, the *Contractor* submits a complete CD copy of the final set of information to the *Employer* for their records.
- 1.2.5 Where the *Contractor* has standard documents within his own company / corporate Environmental Management Plan which might cover a particular requirement of this CEMP, these will either be inserted or cross referenced within the relevant Section of the detailed CEMP (v2.0).
- 1.2.6 A **Checklist** has been included in **Section 17**, providing the *Contractor* with a summary of the minimum information to be provided to the *Employer* pre- during and post-construction. The information / documents listed in the Checklist represent the minimum information to be provided to the *Employer* / Planning Authority at the stages indicated in the Checklist.

## 2 PROJECT AND CONSENT INFORMATION

### 2.1 Schedule of Mitigation, Planning Conditions and Commitments Register

- 2.1.1 Mitigation measures designed to avoid or minimise potential impacts on the environment as a result of construction of the road are detailed within the Environmental Impact Assessment (EIA) Report and associated documents. A Schedule of Mitigation is included in the EIA Report. In addition, if consented, the Planning Consent's Conditions will detail measures to be undertaken and information to be provided ahead of, during and post- construction of the road.
- 2.1.2 An **Environmental Commitments Register** will be prepared by the developer, detailing the mitigation commitments and planning conditions relating to environmental aspects for this project and references where and how these will be addressed. The *Contractor* reviews the Commitments Register on a regular basis, monthly as a minimum, to ensure compliance.
- 2.1.3 The Commitments Register will be included in a revised and updated CEMP (v1.1) document for review by the Planning Authority post-consent / pre-commencement of any construction works.
- 2.1.4 Figure A illustrates the general parties and their responsibilities for obtaining, reviewing, issuing and accepting documentation in regard to environmental management post-consent.

FIGURE A:

GENERAL DOCUMENTATION AND INFORMATION FLOW POST-CONSENT

VEWF	Specialist Consultants	Principal Contractor (PC)	Planning Authority / SEPA
<b>POST – CONSENT / PRE – CONSTRUCTION</b>			
<p>Compile a <b>Commitments Register</b> (Planning Conditions and ES Requirements)</p> <p><b>Appoint Ecologist</b> to undertake further studies/surveys in line with Commitments</p> <p><b>Provide to Planning Authority (PA):</b></p> <ul style="list-style-type: none"> <li>- <b>information</b> to discharge pre-construction Consent Conditions and to address construction phase Consent Conditions</li> <li>- Revised and <b>updated CEMP</b> documentation (V1.1), including e.g. water monitoring plan and design details</li> </ul> <p>Include CEMP requirements in <b>Principal Contractor (PC) Contract</b> documentation</p> <p><b>Appoint PC</b></p> <p><b>Review information provided by PC</b> (pre-construction information, designs etc) and issue further information as required to PA</p>	<p>Undertake <b>baseline monitoring and further surveys</b> as required.</p> <p>Input / Preparation of documents to discharge pre-construction and to address construction phase consent conditions.</p> <p>Review / comment on relevant detailed information where required</p>	<p>Provide all relevant environmental plans, designs and information as required under the Contract (including CEMP requirements)</p>	<p>Review and approve additional information provided in support of discharge of Planning Conditions.</p> <p>Confirm if/when all pre-commencement conditions have been discharged.</p>
<b>CONSTRUCTION</b>			
<p><b>Monitoring of compliance</b> with Contract (including CEMP requirements)</p> <p>VEWF can suspend works (or part thereof) at any time where a potential pollution risk is deemed to be inadequately mitigated or where the agreed methods and/or mitigation measures are not adhered to.</p> <p>Provide information relevant to comply with planning conditions and ES</p>	<p>Ecological/Environmental Clerk of Works (<b>ECoW</b>) <b>monitors compliance</b> with CEMP documentation (including planning conditions)</p> <p><b>Advises VEFW and PC</b> of immediate concerns within 30 minutes.</p> <p>Actively communicates and cooperates with project team including the Contractor in preventing and resolving issues</p>	<p>Conducts works in accordance with Contract (including CEMP requirements, maintain CEMP <b>V2.0</b>)</p> <p>Actively communicates and cooperate with the Ecologist/ECoW at all times</p>	<p>Provision of regulatory guidance and advice.</p>

### 3 CORRESPONDENCE & GENERAL COMMUNICATION

#### 3.1 Roles & Responsibilities

- 3.1.1 The *Employer* and the *Contractor* will agree roles and responsibilities with regards to environmental management prior to commencement of works.
- 3.1.2 Prior to start of the construction works, the *Contractor* provides a **Communication Plan** specifically for environmental management during the works. This will include information on roles and responsibilities as well as communication routes and requirements. The Communication Plan will also provide information on communication during an environmental emergency or incident (specific requirements in the case of an environmental incident are covered in **Section 15** 'Environmental Incident Response').

#### 3.2 Correspondence, Records & Reports

- 3.2.1 The *Contractor* provides a complete record of all relevant communication and documents associated with all aspects of environmental management and implementation of this CEMP. The **Checklist** in **Section 17** provides a summary of the recording and reporting requirements.

#### 3.3 Environmental Audits

- 3.3.1 Audits may be completed at any time by the *Employer*, but at least one per quarter. All completed audit forms (and records of corrective action and close outs) must be filed.
- 3.3.2 The *Contractor* undertakes a programme of environmental audits of his implemented CEMP, including waste management audits and audits of his sub-contractors at least every quarter.

#### 3.4 Risk Assessments and Method Statements

- 3.4.1 The *Contractor* provides risk assessments and method statements (RAMS) for all works and tasks prior to these being undertaken. These documents shall consider and address all of the environmental aspects of the planned works and will include proposed mitigation measures.

#### 3.5 Notice Boards

- 3.5.1 The *Contractor* provides and maintains project environmental notice board(s) which are positioned to ensure that all operatives have opportunity to review notice boards on a daily basis. As a minimum, this will include one notice board to be placed in each compound.
- 3.5.2 The environmental notice boards are maintained by the *Contractor's* Environmental Representative and shall be updated at least monthly.

## 4 SITE INDUCTION AND TRAINING

- 4.1.1 The *Contractor* ensures that all contractor employees, sub-contractors, suppliers, and other visitors to the site are made aware of the specific environmental issues relating to their work. Accordingly, environmental specific induction training will be prepared and presented to all categories of personnel working and visiting the site
- 4.1.2 As a minimum, the *Contractor* provides inductees with the following information:
- Identification of specific environmental risks associated with the work to be undertaken on site by the inductee (e.g. exclusion zones, fuel handling, spill kit locations, sensitive habitats, drainage control/mitigation, spill control, silt pollution control, waste minimisation and recycling, reporting of environmental observations).
  - Environmental Incident and Emergency Response Procedures (including specific Environmental Communication Plan requirements – refer to **Section 15** for further information).
- 4.1.3 The *Contractor* provides a convenient sized copy of an **Eco Map** to all inductees showing sensitive areas, exclusion zones, wash out areas, watercourses, refuelling exclusion areas, location of skips, etc. The map shall be updated and re-issued as required. Any update will trigger a tool box talk –see below- to comment and stress on necessary change.
- 4.1.4 The *Contractor* submits a **tool box talk schedule** at least 1 week prior to commencement of works. The proposed schedule – to be considered as a live document - shall be consistent with the programme of works. Additional tool box talks shall be added as required based on circumstances such as unforeseen risks, repeated observation of bad practices, perceived lack of awareness, pollution event, etc.
- 4.1.5 The *Contractor* provides as a minimum one environmental related tool box talk or other environmental related training session per month on the above topics, along with any other environmental issues which arise on site. Additional tool box talks shall be added as required based on circumstances such as unforeseen risks, repeated observation of bad practices, perceived lack of awareness, pollution event, etc.
- 4.1.6 Where necessary, the *Contractor* requests the assistance of specialist personnel on site, e.g.
- Ecological Clerk of Works (ECoW, independent; appointed by Developer, approved by Planning Authority).
  - Archaeological Clerk of Works (ACoW, independent, appointed by Developer)
  - *Contractor's* Site Environmental Representative.
- to undertake specific toolbox talks or parts thereof as required.
- 4.1.7 The *Contractor* provides, as a minimum, training on the use of spill kits (on ground and in surface waters), to be provided on a regular basis (to account for staff / subcontractor changes etc).
- 4.1.8 The *Contractor* maintains a record of all toolbox talks or other environmental related training sessions delivered, their content and the attendees.

## 5 POLLUTION PREVENTION & MITIGATION

### 5.1 Responsibility

- 5.1.1 The *Contractor* is responsible for pollution prevention for the duration of the contract and until such time as permanent measures, such as permanent drainage and silt mitigation controls, are deemed to be adequate and appropriately constructed.
- 5.1.2 This responsibility will include the actions of any third party who is sub-contracted by the *Contractor* or otherwise involved in the project.
- 5.1.3 It is the responsibility of the *Contractor* to contact SEPA, other statutory and non-statutory bodies in the vicinity of and downstream of the proposed project so that the requirements and interests of these parties are adhered to and protected throughout the duration of the Contract.
- 5.1.4 The *Contractor* is familiar with and executes works in accordance with the good practice guidance outlined in SEPA's Guidelines for Pollution Prevention and other guideline documents as detailed in **Section 16**.
- 5.1.5 The *Contractor* ensures that all staff and subcontractors working on the site are familiar with pollution prevention, the standards outlined in this document and any conditions associated with licences issued under the Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended, e.g. Construction Site Licence.

### 5.2 General Pollution Prevention and Mitigation Measures

- 5.2.1 The *Contractor* ensures that no works are undertaken within 50m from all surface watercourses (unless constructing a culvert, bridge or the consented road), and no works undertaken within 200m of private water supplies without agreement from the ECoW and, where relevant, a specific derogation in place.
- 5.2.2 The *Contractor* provides for spill kits to be located within all construction plant and site vehicles, and close to identified static pollution sources or sensitive receptors (fuel storage areas, water course crossings, etc), to be agreed prior to commencement of the works between the *Contractor* and the *Employer* (these locations will be illustrated on the **Eco Map** as detailed in **Section 4**).
- 5.2.3 The *Contractor* commissions a qualified and experienced, specialist spill clean-up contractor on 24-hour stand-by for the duration of the works and provides details of this specialist to the *Employer* prior to any works commencing.
- 5.2.4 The *Contractor* provides and maintains an **Environmental Mitigation and Drainage Register** or similar purpose record document. The *Contractor* updates the register on an 'as-required' (minimum weekly) basis, detailing status and required actions of areas of concern (e.g. maintenance actions), including drainage. The contents and status of the register is discussed at scheduled weekly construction meetings.
- 5.2.5 The *Contractor* prevents any material or substance which could cause pollution from entering groundwater, surface water drains or watercourses, if necessary via the appropriate use, placement and maintenance of (temporary) silt fences, cut-off drains, silt traps etc.
- 5.2.6 The *Contractor* ensures that any silty water generated on site is ideally settled out as much as possible through drainage mitigation measures (silt traps, etc.) and channelled into appropriate

vegetated (i.e. not blanket bog or other sensitive habitat) areas at least 50 metres from watercourses, unless otherwise approved by the ECoW.

- 5.2.7 The *Contractor* routinely inspects all the facilities used for water treatment and where required repairs and / or cleans those facilities to ensure optimal performance. The *Contractor* inspects watercourses routinely (daily downstream of works) and if there is any evidence of silted or contaminated water entering any watercourse on site the *Contractor* reports this immediately and deals with it in accordance with the relevant emergency plans as detailed in **Section 15**.

### 5.3 Pollution Monitoring & Controls

- 5.3.1 The *Contractor* undertakes regular inspections, at least weekly, of oil / fuel storage areas and plant, permanent and temporary drainage systems and mitigation measures and records any issues or areas of concern in the **Environmental Mitigation & Drainage Register**.
- 5.3.2 The *Contractor* undertakes water quality monitoring as detailed in **Section 8**.
- 5.3.3 The *Contractor* undertakes a regular programme of dust and noise monitoring, including the inspection of relevant plant and vehicle parts.
- 5.3.4 The *Contractor* holds weekly on site meetings with relevant parties (e.g. ECoW, ACoW) to discuss and confirm the appropriate use of mitigation measures and required actions, and documents these in the Environmental Mitigation & Drainage Register. The *Contractor* minutes these meetings and issues the minutes to all relevant parties within 3 days of the meeting.
- 5.3.5 To ensure compliance of the works with this document and pollution prevention requirements, the *Employer* regularly monitors the *Contractor's* works. Should the *Employer* identify any failure to comply with the requirements of this document or the *Contractors* own method statements the *Employer* may stop the associated works until such time as the failure is rectified or alternative working methods agreed through revised RAMS. Any associated cost or time delay incurred will be borne by the *Contractor*.

### 5.4 COSHH

- 5.4.1 The *Contractor* ensures that all materials ordered or brought to site listed as hazardous under the Control of Substances Hazardous to Health (COSHH) Regulations are stored in a COSHH store (lockable store with secondary containment and ventilation) at least 50m from any watercourses and are accompanied by Safety Data Sheets.

## 6 WASTE MANAGEMENT

### 6.1 Site Waste Management Plan (SWMP) Implementation and Records

- 6.1.1 In accordance with best practice the *Employer* requires a Site Waste Management Plan (SWMP) for all their construction sites<sup>2</sup>. The *Contractor* utilises one of the available WMP templates e.g. Smart Waste or WRAP waste management plans<sup>3</sup>, or similar.
- 6.1.1 The SWMP provides details on how waste reduction is to be implemented at the site and also how this is to be monitored throughout the construction phase. The *Contractor* nominates a site representative who takes responsibility for implementation and monitoring of the SWMP.
- 6.1.2 The *Contractor* provides details of their proposed waste contractors (carriers, transfer station, waste recipient etc) to the *Employer* as part of the SWMP, according to the provisions of the contract.
- 6.1.3 The requirements of the SWMP are communicated to all site operatives during their induction. Furthermore, all operatives on site attend waste reduction toolbox talks on a monthly basis to increase awareness of recycling / waste reduction.
- 6.1.4 The *Contractor* provides adequate numbers of separate bins (e.g. paper, cans/plastic, kitchen waste etc) and skips / waste containers (e.g. wood, metal, hazardous / special waste, general waste) to facilitate waste segregation and recycling.
- 6.1.5 The *Contractor* provides a site plan showing all waste storage and recycling locations.

### 6.2 SWMP Monitoring and Auditing

- 6.2.1 The *Contractor's* Environmental Site Representative checks the contents of the site waste and recycling skips on a weekly basis. Non-compliance will be highlighted at the weekly progress meeting and appropriate actions taken e.g. a toolbox talk to all site operatives.

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<sup>2</sup> SWMP are already a legal requirement for certain projects in England and Wales. For projects in E&W where a SWMP is legally required, the *Employer* provides a draft SWMP prior to works commencing.

<sup>3</sup> Information on WRAP and SMART SWMPs can be found on <http://www.wrap.org.uk/content/site-waste-management-plans-1> and <http://www.smartwaste.co.uk/page.jsp?id=97>

## 7 TEMPORARY DRAINAGE

### 7.1 Construction Site Licence

- 7.1.1 In accordance with the Water Environment (Controlled Activities) (Scotland) Regulations 2011, and specifically the recent amendment which defines temporary drainage design of large-scale, construction projects as a licensable activity, the *Employer* applies for a Construction Site Licence prior to commencement of construction.
- 7.1.2 The Construction Site Licence shall outline general good practice temporary drainage principals (as detailed below), alongside a detailed Pollution Prevention Plan (PPP) which will propose a temporary drainage design for Sandwater Road. In reference to published guidance, the PPP shall consider (i) minimising volumes of silt-laden water, (ii) treatment of silt-laden water, (iii) maintenance and monitoring regimes and (iv) general site management to prevent pollution.
- 7.1.3 Following appointment, the Construction Site Licence shall be transferred to the *Contractor*. The *Contractor* ensures all works are undertaken in accordance with the Construction Site Licence and associated conditions.

### 7.2 Scope and Minimum Requirements

- 7.2.1 The *Contractor* reviews all temporary drainage designs and drawings associated with the Construction Site Licence. If the *Contractor* envisages difficulties in implementing the design, or recognises an alternative, more effective arrangement, this is immediately communicated to the *Employer*. The *Contractor* agrees proposed changes with relevant stakeholders, i.e. SEPA.
- 7.2.2 The *Contractor* ensures compliance with the Water Environment Controlled Activities (Scotland) Regulations 2011 (as amended).
- 7.2.1 The *Contractor* maintains an **Environmental Mitigation & Drainage Register** (see **Section 5**) detailing (e.g. numbered, zoned or other appropriate descriptor) all temporary drainage mitigation features (e.g. lagoons, sumps, silt buster locations, pump locations, temporary ditches etc). The *Contractor* reviews and updates the register on a weekly basis and reviews this register during weekly meetings.
- 7.2.1 The *Contractor* designs all new drainage to accommodate a 1:200 year + climate change storm event, as a minimum.
- 7.2.1 To prevent the pollution of existing drainage systems and watercourses, the *Contractor* designs and constructs a drainage system to accommodate construction and post construction activities, including all necessary silt mitigation measures.
- 7.2.2 As a minimum, all temporary drainage is installed as the road is constructed, where possible the permanent drainage is installed as the *works* progress.
- 7.2.3 Drainage associated with the *works*, with the exception of that carrying purely greenfield run-off, is not permitted to discharge directly into any existing drainage or watercourse without being subject to pre-treatment.
- 7.2.4 Except where necessary to facilitate the crossing of a watercourse, no works will be undertaken within 50m of any watercourse identified on the 1:50,000 OS map, or 25m of any other watercourse (except where an element of infrastructure may be downslope of a watercourse).

- 7.2.5 The *Contractor* does not discharge water on either a temporary or permanent basis unless he has acceptance from the relevant landowners and the ECoW, and complied with the requirements of the relevant Authorities, Utilities and Service Providers.
- 7.2.6 The *Contractor* does not discharge any drainage within 50m of a watercourse unless accepted otherwise by the Project Manager and the ECoW.
- 7.2.7 Access for livestock to each watercourse is maintained or replaced where required as a result of the design and execution of the works.

### 7.3 Clean Water Diversion

- 7.3.1 Where possible, greenfield run-off will be kept separate from silty water or other potentially contaminated water. Where appropriate, in order to collect and divert greenfield run-off from construction disturbed areas, interceptor ditches and other drainage diversion measures will be installed in advance of any excavation works.
- 7.3.2 The *Contractor* maintains separate silty and clean water drainage channels and discharge points. Discharge to vegetated areas shall be a minimum of 50m from watercourses to allow settlement of suspended solids. Where settlement over vegetation is not ecologically sound (e.g. involving intact blanket bog, requiring only rain-fed nutrients), or is not practical or adequate to deal with the volume of silt generated, the *Contractor* provides and maintains silt fencing and / or settlement ponds.

### 7.4 Silt Mitigation and Settlement Ponds

- 7.4.1 The *Contractor* erects and maintains silt fences to protect all watercourses, which may be affected by the works. The *Contractor* maintains these weekly to the satisfaction of the *Project Manager* and ECoW.
- 7.4.2 The *Contractor* undertakes maintenance of all temporary and permanent drainage solutions as and when required and at a frequency of at least weekly whilst Principal Contractor. The *Contractor* creates and manages the Environmental Mitigation and Drainage Register and issues this to the *Project Manager* and ECoW on a weekly basis.
- 7.4.3 Silt laden run off should be expected from any areas of recently exposed soil or rock. This silt laden run-off will be captured and directed via berms or ditches towards specially constructed sediment retention structures.
- 7.4.4 Siting of settlement ponds will take into consideration access requirements for reinstatement and maintenance (for example: periodic silt removal, expansion of ponds or incorporation of additional silt mitigation measures, etc.).
- 7.4.5 The *Contractor* discusses and agrees the location of lagoons and other drainage mitigation measures with the ECoW prior to associated works taking place.
- 7.4.6 Where standing water accumulates within the base of the excavations, due to surface water run-off or groundwater seepage, the *Contractor* operates a '**permit to pump**' procedure to control removal of water from the excavation. The *Contractor* seeks the ECoWs approval prior to granting a 'permit to pump'.

## 7.5 Temporary Construction Phase Road Drainage

- 7.5.1 All permanent drainage will be constructed as per the Road Construction Consent design as approved by SIC Roads. The following details requirement during the temporary road construction phase, i.e. where the road surface remains hydraulically bound.
- 7.5.2 Surface water run-off from the carriageway will be attenuated to 1 in 10 year greenfield runoff rates as far as possible with no flood risk during the 1 in 200 year event.
- 7.5.3 Culverts will be designed in accordance with DMRB HA 106/04 Drainage of Run-off from Natural Catchments, and in coordination with SEPA requirements based on a 1 in 200 year event + 20% climate change.
- 7.5.4 The *Contractor* installs drainage such that no section of road is trafficked until the associated drainage is complete. If the *Contractor* constructs any parts of the *works* without its designated drainage system in place, or a sufficient temporary alternative, the *Project Manager* may instruct the *Contractor* to exclude all non-essential traffic from that area until the drainage system is in place.
- 7.5.5 The *Contractor* provides pipe culverts for cross drainage. Pipe culverts extend beyond the edge of access track construction materials by at least 1m. Check dams are installed immediately above a cross drain inlet.
- 7.5.6 The *Contractor* provides silt traps / catch pits at the inlet of all cross drains to prevent the pipes becoming blocked and prevent erosion at the inlet points. Silt traps / catch pits are designed to allow access by gully suckers to remove silt and are designed to present no risk to livestock and animals, whilst permitting unrestricted water flow into the catch pit.
- 7.5.7 The *Contractor* provides erosion protection at all inlets and outlets to protect against the erosive force of flow during high rainfall events. The type of erosion protection may vary and will be influenced principally by the flow capacity of the culvert / relief drain, velocity and turbulence of flow and sensitivity of the outfall environment.
- 7.5.8 The *Contractor* erects and maintains silt fences to protect all watercourses, which may be affected, within 50m of any element of the *works* or drainage outfall. The *Contractor* maintains these.
- 7.5.9 All drainage channels are sufficiently wide as is practicable to allow wildlife to safely enter/exit the channel.
- 7.5.10 The *Contractor* provides scour / erosion protection to slow the flow of water.
- 7.5.11 The *Contractor* provides check dams / water bars (flow barriers or dams constructed across the drainage channel) at regular intervals within drainage ditches. Check dams are required in order to reduce the velocity of water and therefore allow settlement of coarser sediment particles, as well as silt at low flow conditions. Reducing velocity will also prevent basal scouring of the drainage channel.
- 7.5.12 Check dams are constructed of clean aggregate graded 50mm – 300mm and are embedded into the side walls and invert of the excavation by at least 100mm. The number and location of check dams will be dependent on the slope gradient, flow and volume of water though the minimum frequency of check dams 1 per 75m length of ditch.
- 7.5.13 Green field run-off and development run-off will be kept separate where possible and will be

channelled separately to suitably vegetated areas at least 50m from watercourses to allow the settlement of suspended solids on site.

## 7.6 Peat and Soil Storage Drainage

- 7.6.1 The *Contractor* considers the location of any temporary peat or soil storage areas such that erosion and run-off is limited, leachate from the stored material is controlled and stability of the existing ground, particularly in peatland areas, is not affected. The *Contractor* also gives consideration to the impacts of poor drainage control in any areas where peat is used in reinstatement (see **Sections 14** and **15**).
- 7.6.2 Interceptor ditches, down slope drainage collection systems, containment berms (embedded where appropriate), and appropriate drainage mitigation measures will be required as with other infrastructure described above.
- 7.6.3 The *Contractor* carefully selects the locations and designs the peat and other spoil storage requirements including methods for reinstatement works and incorporated drainage elements. Such design will be prepared in consultation with the ECoW and *Employer* prior to works commencing.

## 8 WATER QUALITY MONITORING

### 8.1 General Requirements

- 8.1.1 In line with best practice, the *Employer* undertakes surface water quality monitoring where an impact on surface water bodies cannot be ruled-out. The *Employer* considers it best practice to obtain baseline surface water quality data prior to commencement of the works, and to monitor water quality during the works, in order to identify any significant changes of water quality which may be attributed to the construction works.
- 8.1.2 This Water Quality Monitoring Plan (WQMP) is co-ordinated by an environmental consultant appointed by the *Employer*. It is envisaged that the WQMP will encompass all aspects of the wider wind farm development, inclusive of Sandwater Road and Kergord Access Track.
- 8.1.3 Where a decrease in water quality resulting from construction works is observed the *Contractor* undertakes remedial measures and bears the costs of all associated sampling and investigation. The *Contractor* may wish to undertake confirmatory sampling and analysis at any point during the works at his own cost.
- 8.1.4 The WQMP will detail proposed monitoring locations, monitoring frequency and analytical parameters based on the findings of the EIA Report and any associated data sources (e.g. Kergord Access Track and Viking Wind Farm Planning Applications). The WQMP will be submitted to the Planning Authority post-consent / pre-commencement of works as part of CEMP v1.1.

### 8.2 Surface Water Quality Monitoring Locations

- 8.2.1 Monitoring of water quality will be carried out on selected surface waters; specific monitoring locations are under consideration for the wider wind farm development - inclusive of the proposed *works* at Sandwater Road. Definitive locations will be identified post-consent during the detailed design phase (pre-commencement of works).

### 8.3 Monitoring Frequency and Analytical Parameters

- 8.3.1 The frequency of monitoring and specific analytical parameters shall be outlined in the WQMP. However, it is envisaged that this will consist of monthly hydrochemistry sampling throughout pre-construction (baseline), construction and post-construction phases. The Sandwater Road monitoring will be incorporated in a wider surface water quality monitoring programme encompassing the main wind farm development and proposed *works* at Kergord Access Track. Monitoring will include pre-construction (baseline), during and post-construction monitoring.
- 8.3.2 Monitoring of specific locations may cease within 12 months of works ceasing in this area, following consultation with SEPA where necessary.
- 8.3.3 The surface water quality monitoring will include the monitoring of field parameters at each location prior to the collection of water samples at each location for analysis at a suitably accredited laboratory. The field parameters monitored during each monitoring round and obtained via use of a hand-held monitoring device, are acidity (pH), electrical conductivity, temperature, turbidity and dissolved oxygen. Monitoring results will be recorded in the field.

- 8.3.4 Water samples at each location will be obtained and submitted to an accredited laboratory. Table 1.0 below provides an initial indicative list of analytical parameters:

<b>Table 1.0</b>	
<b>INDICATIVE LABORATORY ANALYTICAL PARAMETERS</b>	
<b>Analytical test</b>	<b>Rationale</b>
Acidity (pH)	pH has a major impact on fish survival. Acidification can arise from major peat erosion and rapid changes (increases or decreases) can indicate a pollution event has occurred. pH is required for calculating acid neutralizing capacity.
Alkalinity (Gran alkalinity)	Ability of the water to buffer pulses of acidity coming from acid deposition and acidification of soils within the catchment. Used in calculating Acid Neutralising Capacity and the potential toxic effects of aluminium.
Dissolved and total Aluminium (Al)	Toxicity to fish is of concern, especially where the waters are acidic. Solubility is affected by low pH, but reduced in the presence of high levels of DOC
Ammonium-nitrogen (NH <sub>4</sub> -N)	Nutrient, known to occur as pulse after ecosystem disruption and forestry felling and can potentially stimulate excessive algal growth within rivers.
Total Arsenic (As)	A toxic heavy metal that is present at very low concentrations in the 'natural' environment.
Total Cadmium (Cd)	A toxic heavy metal that is present at very low concentrations in the 'natural' environment.
Dissolved and total Calcium (Ca)	Measures the ability of waters to buffer acidity. Also, an indicator of contamination from cement.
Total Chromium (Ch)	A toxic heavy metal that is present at very low concentrations in the 'natural' environment.
Total Copper (Cu)	A toxic heavy metal that is present at very low concentrations in the 'natural' environment.
Dissolved organic carbon (DOC)	Key component for calculating sensitivity of waters to aluminium toxicity and known to be sensitive to development on peatland. Organic carbon can help to reduce metal toxicities.
Electrical Conductivity (EC)	Acts as a control mechanism for field testing equipment.
Dissolved Iron (Fe)	A naturally occurring metal that could increase as a result of acidification.
Total Lead (Pb)	A toxic heavy metal that is present at very low concentrations in the 'natural' environment.
Dissolved Magnesium (Mg)	A plant nutrient that is usually at higher concentrations in maritime environments.
Dissolved Manganese (Mn)	A naturally occurring metal that could increase as a result of

Table 1.0 INDICATIVE LABORATORY ANALYTICAL PARAMETERS	
Analytical test	Rationale
	soil disturbance.

#### 8.4 Surface Water Quality Monitoring Reports

- 8.4.1 A monthly monitoring report on the findings of the monitoring exercises will be prepared and provided to the *Employer* and the *Contractor* within 1 week of receipt of analytical results.
- 8.4.2 The pre-construction monitoring results will provide baseline values (average and maximum baseline levels), and the monthly monitoring reports for the period covering the construction and post-construction works will highlight any results exceeding the baseline conditions.

#### 8.5 Contractor's Visual and Field Water Quality Monitoring

- 8.5.1 The *Contractor* ensures that all personnel and visitors on site are encouraged (at site inductions) to report visual indications of changes in water quality (e.g. discolouration or other evidence of contamination) in any watercourses on site.
- 8.5.2 **The *Contractor* undertakes visual inspections of the watercourses on site** at least once a week. Locations to be visually monitored will be agreed prior to commencement of construction and reviewed periodically during construction in consultation with the ECoW. The *Contractor's* monitoring records will include the following minimum information:
- Antecedent and current weather conditions;
  - Current construction activities within the vicinity and in particular up stream or up gradient of the observation point;
  - Visual assessment of water colour, turbidity and flow rate;
  - Evidence of chemical contamination;
  - Visual evidence of silt or sediment pollution within the water column or on the bed of the watercourse/standing water body.
  - Details on any communication, corrective action and / or mitigation undertaken as a result of any water quality issues observed during the monitoring visit.
- 8.5.3 Where evidence of pollution is observed to the water environment, emergency response procedures will be implemented and the incident will be reported to the *Employer* within 30 minutes (**Section 16**). Remedial measures will be implemented immediately and details of action taken will be recorded.

## 9 WATERCOURSE CROSSINGS

### 9.1 General

- 9.1.1 The Controlled Activities (Scotland) Regulations 2011 regulate activities in, and proximate to, rivers, lochs and wetlands, including engineering activities like river crossings and culverting. *Works* may require (depending on their nature) Registration with, or a Licence from, SEPA.
- 9.1.2 The *Employer* obtains appropriate Controlled Activities (Scotland) Regulations 2011 permissions from SEPA for the watercourse crossings. The *Contractor* complies with all necessary permissions when executing works affecting a watercourse.
- 9.1.3 The ECoW is consulted with regard to all Watercourse Crossing works. The ECoW carries out surveys immediately prior to construction or upgrading to identify areas of mammal activity in watercourses.

### 9.2 Design Philosophy

- 9.2.1 The design adheres to general good practice for watercourse crossings in line with relevant guidance, in particular CIRIA and Scottish Government publications (**Section 16**), taking into account various requirements summarised below:
- i) All watercourses over which the access roads cross will be routed through culverts or under bridges appropriately sized and designed not to impede the flow of water and allowing safe passage for wildlife;
  - ii) Culvert design will be over-engineered so that it can be sunk into the bed of the watercourse allowing riverine substrate to stabilise on the floor of the culvert (i.e. leaves the watercourse in as natural condition as possible);
  - iii) Low maintenance; and
  - iv) Visually in keeping with the surroundings.
- 9.2.2 All river crossings will be designed to convey a minimum 1:200 year + climate change storm event, and individually sized and designed to suit the specific requirements and constraints of its location.

#### Culverts

- 9.2.3 The design of all culverts is in accordance with DMRB HA 106/04 Drainage of Run-off from Natural Catchments.

#### Bridges

- 9.2.1 The *Contractor* consults and complies with the requirements of the relevant Statutory Authorities, Utilities and Service Providers, including the onsite ECoW and the *Employer* for the construction of any culverts or bridges.
- 9.2.2 Watercourse crossing structures (i.e. bridges) shall provide sufficient clear span as to ensure no *works* are required within one metre of the watercourse.

- 9.2.3 All new watercourses spanning structures are designed to accommodate the flow resulting from the **1:200 year + climate change storm event**. These structures are designed to ensure they do not affect any existing floodplain or the downstream flow characteristics of the watercourse.

### **Erosion Protection**

- 9.2.4 Erosion protection is generally required at the outlet of the culvert (and to a lesser extent at the inlet). However, by appropriately sizing and designing the structure erosion can be minimised reducing the need for any engineered protection.
- 9.2.5 Where possible the design will avoid using artificial bank reinforcement, and the watercourse kept as natural as possible. Bank protection measures will have to be justified to SEPA regardless of the required level of authorisation (under the Controlled Activities Regulations) required.

## 10 ECOLOGICAL PROTECTION

### 10.1 Scope and Objectives of the Habitat and Species Protection Plan

- 10.1.1 Implementation and monitoring of a Habitat and Species Protection Plan will be the responsibility of the Ecological Clerk of Works (ECoW). The ECoW will be a qualified ecologist and a Member of the Chartered Institute of Ecology and Environmental Management (CIEEM).
- 10.1.2 The ECoW is appointed and employed by the *Employer*, generally the appointment is subject to approval by the Planning Authority after submission of details of qualifications and experience. The role and duties of the ECoW are further detailed in **Section 10.5** below.
- 10.1.3 The Habitat and Species Protection Plan applies to the immediate pre-construction and the construction period of the development.

### 10.2 Definitions, coverage and scope

- 10.2.1 Species protection may be defined as the set of measures used to minimise the risk of disturbance, injury or death to species of nature conservation interest. Particular consideration is afforded to species protected under EC and/or UK legislation.
- 10.2.2 Habitat protection may be defined as the set of measures used to minimise the risk of damage or destruction to the terrestrial and aquatic habitats of the site, including groundwater dependent terrestrial ecosystems (GWDTE), and downstream freshwater ecosystems.
- 10.2.3 The generally applicable and best practice protection and mitigation measures to be applied at the site are summarised below. **Following receipt of Planning Consent the habitat and species protection plans will be revised and updated to incorporate site specific requirements as detailed in the EIA Report and stipulated in relevant planning conditions, together with any mitigation requirements identified during post-consent (pre-works) species surveys.**

### 10.3 Habitats Protection Plan

#### Aquatic Habitats:

- 10.3.1 The purpose of the aquatic habitat protection plan is to maintain a high water quality to support aquatic habitats used by any existing aquatic species like otters, water voles and fish and their associated habitats, both within the development site and downstream of the site, including salmon spawning grounds. This extends to protection of the Sandwater Loch Site of Special Scientific Interest and its associated features (e.g. transitional fen habitat).

#### Terrestrial Habitats:

- 10.3.2 Protection of terrestrial habitats (through avoidance and minimisation of loss and change), for example, active blanket bogs, groundwater dependent terrestrial ecosystems (GWDTE), is required as these habitats are recognised as important under EC Directives.
- 10.3.3 All site working practices need to consider their possible effects on sensitive habitats and soils and mitigate significant negative effects as far as is reasonably possible.

#### Habitat Protection Measures:

10.3.4 Proposed measures for both aquatic and terrestrial habitat protection are generally as follows:

- A **50m buffer** will be maintained between working areas, machinery and watercourses in all areas except at watercourse crossing points (any buffer zones less than 50m have to be authorised by the ECoW, the minimum buffer zone is 20m). Buffer zones will be demarcated, where necessary, by the ECoW. The *Contractor* will discuss and agree the requirement for demarcation with the ECoW and the *Employer* prior to commencement of any works.
- Details on watercourse crossings design and work, taking into account habitat and species protection are provided in **Section 9** of this CEMP;
- A Water Quality Monitoring Plan, to be implemented prior to commencement of the construction works and undertaken in the pre-, during and post-construction phase of the development is detailed in **Section 8** of this CEMP;
- Construction activities around watercourses will adhere to general good practice measures and Guidance for Pollution Prevention produced by SEPA. Relevant guidance documents are referenced in **Section 16** of this CEMP;
- Pollution prevention measures will be installed and maintained as appropriate, **Sections 5** and **7** provide details on pollution control and drainage mitigation measures.

10.3.5 The **Contractor** ensures the protection of habitats as detailed in this CEMP. The *Contractor*:

- Includes information on habitat and species protection and legal requirements in the daily inductions and toolbox talks, in consultation with the ECoW (see **Section 10.5**).
- Ensures that all staff, contractors subcontractors and visitors are aware of the emergency response procedures to be followed in the event of a pollution incident.
- Microsites development infrastructure to reduce the damage to sensitive habitats, in consultation with the ECoW (plus, GCoW and ACoW), as necessary.
- Makes best use of excavated turf and peat as part of reinstatement procedures (see **Sections 14** and **15** (Excavated Materials and Reinstatement)).
- Adheres to buffer distances relating to watercourses / lochs / springs and species as detailed in this CEMP and revisions thereof.
- Prevents discharge or run-off of silty or polluted water to ground / habitat / watercourses.
- Consults the ECoW ahead of any clean water discharge to ground / habitat / watercourses.

## 10.4 Species Protection Plan

### Birds

10.4.1 All bird species are protected by law<sup>4</sup>. All breeding birds encountered within the development

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<sup>4</sup> Under the Wildlife and Countryside Act 1981 (Appendix 1) it is an offence to kill them or damage their nests and eggs. Species listed in Schedule 1 of the Act are specially protected, so that it is an offence merely to disturb them while nesting. Other specially protected species are listed on Annex 1 of the EC Birds Directive, which also prohibits

area access site or at pinch points are protected.

10.4.2 If construction commences before the end of the breeding season the **Contractor** provides bird deterrence measures prior to the start of the breeding season. If works do not begin until the end of the bird breeding season, the *Contractor* undertakes those checks required e.g. for species such as crossbills if any forestry felling is occurring.

## Otter

### Pre-Construction measures

10.4.3 Within 3 months prior to commencement of the development on site (or during the suitable survey period prior to commencement of works), a pre-construction otter survey will be carried out by the *Employer*. This will be conducted by a suitably qualified and experienced ecologist. Surveys will not be undertaken during, or after heavy rain or periods of flood.

10.4.4 If required, the ECoW will make relevant licence applications (e.g. licence to disturb) to SNH on behalf of the *Employer* and will oversee and / or undertake related mitigation measures in accordance with any licence obtained.

10.4.5 Prior to works commencing, the ECoW marks buffers around all known otter shelters using a marking method and distance approved by the planning authority in consultation with SNH.

### Measures during construction

10.4.6 The *Contractor* informs the ECoW at least one week ahead of works commencing in or near watercourses, and consults the ECoW on any mitigation measures required as part of the works.

10.4.7 The *Contractor* does not commence construction activities and blasting within 100m from a watercourse used by otters until two hours after sunrise, ceasing two hours before sunset; machinery lights will be directed away from watercourses. Sunrise and sunset time can be obtained from the internet ([www.timeanddate.com](http://www.timeanddate.com));

10.4.8 The *Contractor* ensures that

- all open excavations are ramped to enable easy exit by otter and other species;
- culvert pipes stored on site are capped, or if caps are not available, pipes are stored vertically, to prevent otter entrapment;
- design of any permanent or temporary lighting is such that it is directed away from watercourses and that an unlit corridor of 30m either side of watercourses is maintained.

10.4.9 During the construction period, the ECoW carries out further checks, including checks ahead of the construction front.

10.4.10 The ECoW maintains a mapped record of checked areas and a log of otter surveys and informs the *Contractor* and *Employer* as soon as possible of any potential restrictions and limitations to the planned works as a result of the checks / survey findings.

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wilful disturbance at the nest. However, if disturbance to the nest of any other bird species without special protection were sufficient to prevent parent birds from incubating their eggs or feeding their nestlings, so that the brood died, this could be regarded as an offence under the 1981 Act.

10.4.11 The ECoW notes key areas of otter activity and any potential shelters outwith a licensable distance from construction and monitors activity at these areas and shelters regularly during construction.

10.4.12 All site personnel report any sightings of otters and their potential otter shelters encountered on site to the ECoW as soon as possible.

#### **Other Species - Pre-Construction Measures**

10.4.13 Within 3 months prior to commencement of the development on site (or in relevant suitable species survey season, prior to commencement of works) pre-construction species surveys relevant to those species identified in the EIA Report will be carried out by a suitably qualified and experienced ecologist on behalf of the *Employer*.

10.4.14 If required, the ECoW will make relevant licence applications to SNH on behalf of the *Employer* and will oversee and/or undertake related mitigation measures in accordance with any licence obtained.

10.4.15 Pre-works survey findings will further inform any additional mitigation measures deemed necessary for the construction works phase. This information will be included in the updated CEMP (v1.1).

### **10.5 The Ecological / Environmental Clerk of Works (ECoW)**

#### **Background and Term of Appointment**

10.5.1 The *Employer* considers it best practice to provide an ECoW for the duration of the construction works, irrespective of whether or not this role is required as part of a Planning Consent.

10.5.2 The ECoW will generally be appointed 3-4 months prior to work commencing on site. The role will be full-time for the duration of the main construction period (construction of infrastructure and associated facilities) and may be reduced to a part time role (2-4 days/week) thereafter (turbine deliveries, electrical works etc) subject to *Contractor* performance and general consensus between ECoW, *Employer* and the Planning Authority (where required).

10.5.3 The ECoW will be a member of the Chartered Institute of Ecology and Environmental Management (CIEEM) with suitable qualifications and experience.

#### **ECoW tasks**

##### **Overview**

10.5.4 The ECoW advises and assists the *Contractor* in avoiding, minimising and mitigating adverse effects. The *Contractor* consults with the ECoW prior to undertaking specific works as detailed below, and considers the ECoW's advice at all times.

10.5.5 Where the ECoW disagrees with works being undertaken by the *Contractor*, resulting in a breach of planning conditions or measures detailed in the EIA Report and the CEMP, the ECoW informs the *Employer* immediately. On advice of the ECoW the *Project Manager / Employer* may halt the works or parts thereof.

10.5.6 The following are anticipated to represent the main tasks which translate these aspects of the role into action. This list is not intended to be exhaustive and will require modification during the construction period as and when circumstances dictate.

### Micrositing

10.5.7 The ECoW (in consultation with the ACoW, if applicable and required) advises on micro-siting, where required. The *Contractor* consults the ECoW prior to micro-siting being undertaken.

### Drainage Management and Watercourses

10.5.8 The ECoW conducts (and maintains records of) weekly inspection of site pollution prevention measures (silt fences, settlement ponds, check dams etc) and visually assesses their effectiveness. This includes inspection of water management measures installed by contractors such as excavation pumping and diversion channels. The ECoW:

- Assesses, in advance of works, habitats and species on ground that may be affected by drainage management.
- Reviews drainage management proposals associated with temporary peat storage and reinstatement works in advance of such works commencing.
- Surveys in advance of any works near or crossing a ditch or watercourse, the condition of the watercourse and for protected terrestrial and aquatic species, using an established specialist if necessary.

### Excavated materials and reinstatement

- Reviews working areas and route corridors, in consultation with the ACoW as necessary.
- Agrees proposals for side casting and temporary storage areas as development proceeds.
- Monitors the condition of stored turf.
- Agrees any required hydroseeding specification, including seed mix and fertiliser quantities, if required, in liaison with SNH.

### Ecological Protection Tasks

- Erects and maintains markers and notices for limits around watercourses, exclusion zones and other areas with protected species or habitats.
- Considers requests and granting of permission to enter within habitat and protected species exclusion zones.
- Conducts weekly checks for protected species and sensitive habitat (peatland, watercourses) within and adjacent to construction areas, and maintains a register of all habitat inspections carried out.
- Implements species protection plans, if ground checks suggest this is necessary for the protected species detailed in **Section 10.4** above.
- Implements the Terrestrial Habitat Protection Plan and Aquatic Habitat Protection Plan, including surveys and checks specific to those plans.
- Executes the terms of any Licence to Disturb, aquatic species and birds, or disturb/destroy

their places of shelter, which might be required as a result of future surveys and searches.

#### **On-site communication and liaison with Consultees**

10.5.9 The ECoW will always inform the *Employer's* Project Manager and *Contractor* of areas of particular concern, who will then make a decision as to the subsequent action.

10.5.10 The ECoW is involved in the delivery of biodiversity-related Toolbox Talks as part of the site induction process. All staff will know of the circumstances when the ECoW should be contacted, and the relevant phone numbers.

10.5.11 The ECoW liaises with the statutory consultees as required and agreed with the *Employer* in line with any Planning Authority requirements (if applicable).

#### **Meetings and Recording**

10.5.12 The ECoW attends a weekly (or fortnightly, if agreed) meeting which will include representatives from the *Employer*, *Contractor*, sub-contractors. The purpose of these meetings is to:

- review the effectiveness of the ecological and environmental mitigation;
- review the construction progress on site in the context of ecological and environmental mitigation;
- discuss construction programme for the following week, and fortnight look-ahead; and
- agree actions on these matters.

10.5.13 The ECoW keeps a record of the following:

- animal sightings and signs (including birds, in addition to other site ornithological monitoring), particularly those noted in searches one or two days in advance of construction;
- the habitats of ground to be developed via survey at least a week in advance of construction work;
- record of tasks carried out and written record of all verbal advice given.

10.5.14 The ECoW maintains a **GIS database** of key recordings made during the construction period. Field records will use, if necessary, differential GPS technology captured into a field GIS system.

10.5.15 The ECoW assists the *Employer* with the supply of relevant information for compliance assessment.

10.5.16 The ECoW provides monthly reports (template will be provided by the *Employer*).

10.5.17 The ECoW produces a final report to the *Employer* documenting the environmental and ecological effects of the construction period. The evidence for effects will be based on findings included in the minutes of weekly / fortnightly meetings, together with other recording information maintained by the ECoW. The report will relate results to residual effects predicted in the EIA Report. The report will be made available to the *Contractor* and the Planning Authority.

## 11 ARCHAEOLOGICAL PROTECTION

- 11.1.1 Any construction works involving ground disturbance will pay due attention to the potential presence of unknown and recorded archaeological subsurface features or structures. To ensure this, the following measures will be put in place:
- 11.1.2 **Archaeological support will be provided by an Archaeological Clerk of Works (ACoW) appointed by the Employer.** The ACoW will prepare a methodology for the identification, preservation and recording of archaeological remains at the site ('Written Scheme of Investigation'). The contents of the WSI will generally be agreed with the Planning Authority's archaeologist.
- 11.1.3 The services provided by the ACoW will include a walkover survey of the road alignment prior to commencement of construction works. Generally, any archaeological features identified will be fenced off / demarcated prior to commencement of construction works. Information on such areas will be included in the site induction / toolbox talks.
- 11.1.4 A 'Contractors Guidelines' document will be prepared by the ACoW, which provides brief and clear guidelines for all construction contractors undertaking any ground works including topsoil and overburden stripping and road construction. The guidelines contain details of arrangements for calling upon professional archaeological support (the ACoW) in the event that buried remains of potential archaeological interest are discovered during the absence of a watching brief.
- 11.1.5 As part of the WSI / 'Contractors' Guidelines' a call-out procedure will be put in place which should ensure the presence of an archaeologist on site, generally within 24 hours of a call-out.
- 11.1.6 The *Contractor* familiarises themselves with the contents of the above documents and ensures that their contents is communicated to relevant staff, subcontractors and plant operators via the induction and toolbox talks prior to commencement of any ground works.

## 12 LANDUSE AND PUBLIC ACCESS

### 12.1 Agricultural Land

12.1.1 The *Contractor* liaises with relevant landowners prior to commencement of works. The *Contractor* undertakes a site walk-over of relevant areas with the landowner (and *Employer* as appropriate).

12.1.2 The *Contractor* will provide a risk assessment for all works on agricultural land, identifying potential hazards / sensitive areas and proposed mitigation measures, as identified in liaison with the landowner.

12.1.3 The risk assessment, method statements and mitigation measures will address the following potential issues (this is not an exhaustive list and the *Contractor* will amend as applicable)

- General access restrictions (gates, fences, unstable ground);
- Stock movement (type of stock, numbers, location of stock and requirements/timetable for movement, access restrictions, specific risks e.g. cattle/bulls etc);
- Season-dependending risks / restrictions (lambing season, crop harvesting etc);
- Cattle grids and gates (proper use, repair and installation of cattle grids, gates etc);
- Fencing (requirement for removal / replacement/repair of fencing, location of electrical fencing etc); and
- Surface water (drainage, surface water bodies, livestock drinking water supplies and routes).

### 12.2 Public Access

12.2.1 There are currently no public rights of way on the site. During construction public access would be prohibited for health and safety reasons.

## 13 EXCAVATED MATERIALS

### 13.1 Contractor Requirements

- 13.1.1 In advance of each main phase of works, the *Contractor* (in consultation with ECoW, and other specialists where required), provides a **method statement detailing expected volumes, material classification, storage and reuse procedures for the excavated materials anticipated from that particular work area.**
- 13.1.2 The *Contractor* liaises with SEPA on all aspects of waste management, if required, to ensure compliance with all appropriate regulatory controls prior to and during construction works.
- 13.1.3 The EIA Report contains information on expected soil types and volumes requiring excavation and reuse as part of the construction works. The *Contractor* utilises this information and any additional investigation findings post-consent when planning the *works*.
- 13.1.4 Any material that is not suitable for a predetermined use without the requirement for treatment (e.g. dewatering) is classed as waste and requires to be dealt with in accordance with the *Contractor's* developed Site Waste Management Plan.
- 13.1.5 The *Contractor* maintains a **Geotechnical / Peat Slide Risk Register.**

### 13.2 Excavations

- 13.2.1 The *Contractor* creates, and maintains, an **Excavation Register**, which is updated weekly and details the location and extent of all open excavations and the current and original location of all stockpiled material. The *Contractor* makes this available to the *Project Manager* upon request.
- 13.2.2 The *Contractor's* attention is drawn in particular to the risk of slope instability and peat slides. The *Contractor* ensures that under all conditions, the ground surface stability is fully maintained both during investigation and construction of the road.
- 13.2.3 The *Contractor* undertakes sufficient additional studies and intrusive Site Investigations, where required, to establish the prevailing ground conditions at the Site and the likely ground conditions following completion of the construction and installation *works*. This includes geotechnical and geo-environmental investigations, hydro-geological and hydrological investigations or other investigations to ensure that the ground conditions are fully understood. Particular attention should be paid to peat or similar organic deposits, even on shallow slopes.
- 13.2.4 The *Contractor* undertakes turf and soil stripping and excavation works in line with best practice as described in relevant guidance documents in **Section 16**, in particular:
- *Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste* (2012).
- 13.2.5 The *Contractor* employs a construction management team and plant operators of proven experience of working in a peat environment for all peat drainage, excavation (including cable trenches), track construction and reinstatement & restoration *works*

### 13.3 Handling and Temporary Storage of Excavated Material

- 13.3.1 Where material is not required for immediate reinstatement, temporary storage may be required.

To minimise handling and haulage distances, where possible excavated material will be stored local to the site of excavation and / or local to the end-use site where it is required for reuse. The *Contractor* agrees storage location(s) with the ECoW prior to commencement of excavations.

- 13.3.1 Where the *Contractor* excavates topsoil, peat vegetation, or other organic soil the turfs are stored separately, with vegetation facing upward. If required, the *Contractor* waters the turfs to maintain them as suitable for reinstatement and restoration.
- 13.3.2 Where the *Contractor* excavates peat soils these are segregated by material type and stored separately in stockpiles. Peat soils are stockpiled no higher than 1m.
- 13.3.3 Where practical the *Contractor* reuses topsoil / peat as soon as possible after excavation.
- 13.3.4 Where the *Contractor* makes stockpiles, these are located in non-trafficked areas. The *Contractor* only handles topsoil or peat twice: once from the excavated area to a stockpile and secondly from the stockpile to its final position unless agreed, in advance, with the *Project Manager* and the ECoW.
- 13.3.5 Stockpiles will be isolated from any surface drains and a minimum of 50m away from watercourses, unless otherwise agreed with the ECoW. Stockpiles will include appropriate bunding to minimise any pollution risks where required.

#### **13.4 Cabling Works**

- 13.4.1 All cabling works will require similar drainage mitigation, materials handling and pollution prevention measures as detailed within this CEMP.
- 13.4.2 Cable trenches will be constructed to ensure ground disturbance is kept to a minimum and the design of the works will be such that cable trenches will not act as preferential flow pathways for surface or groundwater thereby reducing impacts on hydrological flow paths as far as possible.
- 13.4.3 Excavated materials will be handled, stored and reinstated as per the requirements of this CEMP.

## 14 REINSTATEMENT

### 14.1 General

14.1.1 The *Contractor* undertakes reinstatement works.

14.1.2 Reinstatement works are those undertaken during construction and aim to address any damage inflicted on the landscape as part of the construction works. Reinstatement is undertaken in parallel with, or as soon as possible following, the construction in each area, e.g. re-dressing of road verges (and other areas that may be disturbed as a result of the construction process). Where redressing proves unsuccessful re-seeding (including hydro-seeding) may be part of reinstatement measures. Reinstatement is primarily undertaken using in-situ and site-sourced materials (turfs and peat).

### 14.2 Construction Reinstatement

14.2.1 The *Contractor* provides proposed methods for reinstatement of materials in profiling of the road verges and cable trenches; other disturbed areas and redundant construction features (such as drainage ditches, settlement ponds or other sediment control measures and other features which may not be required as part of the permanent works). Reinstatement proposals will provide details on methods proposed for replacement of turves and re-seeding where appropriate. If reseeded is required, constituent species shall be agreed with the ECoW.

14.2.2 Excavated peat from founded sections of the road will be used for dressing the side slopes of the road embankments. No mineral soil will be used for dressing the side slopes of tracks to prevent silt run off.

14.2.3 Where practicable, reinstatement and re-profiling of, and around, infrastructure will be carried out as the work front progresses, or as soon as is practical after the substantial completion of the works themselves in a particular area. Early reinstatement and re-profiling is required to minimise visual impact and temporary storage / stockpiling of soils and to promote vegetation and habitat re-establishment as early as possible.

14.2.1 Where feasible, to prevent scour and run off and facilitate vegetation re-establishment, any down-slope embankments will be graded such that the slope angles are not too steep and there is a gradual transition with the surrounding / existing ground profile.

14.2.2 Reinstatement of vegetation will be focused on natural regeneration utilising peat or other vegetated turves or soils stripped and stored with their intrinsic seed bank. To encourage stabilisation and early establishment of vegetation cover, where available, peat turves or other topsoil and vegetation turves in keeping with the surrounding vegetation type will be used to provide a dressing for the final surface.

14.2.3 Following completion of the access tracks the side-cast topsoil and vegetated material will be used to dress off the embankments of the new track as part of an ongoing reinstatement process. The turves should be re-instated as soon as is practicable.

14.2.4 The *Contractor* undertakes the works in a manner as to allow reinstatement of disturbed areas to proceed as early as possible and in a progressive and sustainable manner.

14.2.5 Any accidental damage or other impacts caused during the works are repaired and reinstated or restored by the *Contractor* to the *Employer's* satisfaction and in accordance with the Planning Consent and any agreements with the landowners, all prior to taking over by the *Employer*.

## 15 ENVIRONMENTAL INCIDENT & EMERGENCY RESPONSE

### 15.1 General Requirements

15.1.1 The *Contractor* prepares a detailed Environmental Incident and Emergency Response Plan.

### 15.2 SEARS and Environmental Auditing

15.2.1 A VEWf Safety and Environmental Awareness Report (SEAR) is required to be completed for any potential or actual environmental incident or emergency which occurs or is noted on site. Blank SEAR *pro forma* will be provided by VEWf.

### 15.3 Summary Sheet for Machinery / Plant Operators

15.3.1 The *Contractor* provides a single page Summary Sheet containing the key information for incident response to be used as a quick reference for any on-site personnel witnessing an incident. A laminate copy of this Summary Sheet will be located with all plant / machinery / on-site vehicles. A Communication Plan (to be followed in the event of a spillage) will be provided by the *Contractor*, in liaison with relevant stakeholders and will be provided to the *Employer*, according to the Contract provisions, prior to commencement of the site works.

Key Information to be provided to the **Project Manager and/or the ECoW within 30 minutes** of an incident (irrespective of the scale / severity of the incident):

- What substance was spilled;
- Approximate volume and time of spillage;
- Accurate Location of spill (GPS or grid reference if possible, or bridge ID / number referenced on map etc);
- All measures taken;
- Help required i.e. manpower, machinery, expert advice, disposal, etc; and,
- Whether the spill has reached a watercourse.

## 16 REFERENCE DOCUMENTATION

### 16.1.1 SEPA/EA Pollution Prevention Guidelines (PPGs) and Guidance for Pollution Prevention (GPPs):

GPP 2: Above ground oil storage tanks

GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer

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

PPG 23: Maintenance of structures

PPG 26: Safe storage - drums and intermediate bulk containers

*Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste*, a joint publication by Scottish Renewables and the Scottish Environment Protection Agency, 2014 (version 1 January 2012).

*Good Practice During Wind Farm Construction*, A joint publication by Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission Scotland, Version 3, September 2015;

SEPA Regulatory Position Statement, Developments on Peat, National Waste Policy Unit, 9 February 2010.

SEPA Guidance, WST-G-052, Developments on Peat and Off-Site Uses of Waste Peat, version 1, May 2017

*Engineering in the Water Environment*, Good Practice Guide, Construction of River Crossings, Second edition, SEPA, November 2010.

*Prevention of Pollution from Civil Engineering Contracts: Special Requirements* publication (SEPA, version 2, June 2006)

### 16.1.2 Scottish Natural Heritage (SNH):

*Floating Roads on Peat*, Forestry Civil Engineering and SNH, August 2010.

*Constructed tracks in the Scottish Uplands*, updated 2015.

Decommissioning and Repowering Plans for Onshore Wind Farms, SNH, October 2014

### 16.1.3 British Standards Institute (BSI):

Code of Practice for Earth Works BS6031:2009

Code of practice for noise and vibration control on construction and open sites. Noise, BS5228-1: 2009.

Code of Practice for Biodiversity Management BS42020:2013

### 16.1.4 CIRIA Publications:

Control of Water Pollution from Construction Sites – Guide to Good Practice (SP156)

Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors

(C532)

Control of Water Pollution from Linear Construction Projects – Technical Guidance (C648)

Control of Water Pollution from Linear Construction Projects – Site Guide (C649)

Culvert Design Guide, C689, CIRIA, 2010;

Environmental Good Practice – Site Guide (C650)

The SuDS Manual (Report C753) - CIRIA, 2015

Site Handbook for the Construction of SUDS (C698)

16.1.5 **Scottish Government:**

River Crossings and Migratory Fish: Design Guidance, Scottish Government, 2012.

16.1.6 **Controlled Activities Regulations (CAR):**

The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended by Water Environment (Miscellaneous) (Scotland) Regulations 2017).

The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended), A Practical Guide, SEPA, Version 8.1 January 2018.

Supporting Guidance (WAT-SG-75) Sector Specific Guidance: Construction Sites, WAT-SG-75, Version 1, SEPA, Feb 2018.

## 17 CHECKLIST – Required *Contractor's* Information

17.1.1 The information listed in the table below will be provided by the *Contractor* to the *Employer* according to the provisions of the contract, as indicated.

Pre-commencement of works:	Yes/No
Name and CV of nominated and appropriately qualified person for site based single point of contact for all environmental matters ( <b>Section 1</b> )	
Communication Plan ( <b>Section 3</b> )	
Risk Assessment & Method Statements ( <b>Section 3</b> )	
Schedule of toolbox talks ( <b>Section 4</b> )	
Eco Map ( <b>Section 4</b> and <b>10</b> )	
A Site Waste Management Plan (SWMP, <b>Section 6</b> )	
Details of proposed waste contractors and site plan showing waste collection / storage points ( <b>Section 6</b> )	
Environmental Mitigation and Drainage Register ( <b>Section 7</b> )	
Geotechnical Risk Register ( <b>Section 7</b> , <b>Section 14</b> )	
Watercourse crossing plans and CAR licences / authorisations ( <b>Section 9</b> )	
Excavation / Reinstatement plans ( <b>Section 14</b> and <b>15</b> )	
Environmental Incident and Emergency Response Plan ( <b>Section 16</b> )	
During and post-completion of works:	Yes/No
Records of relevant communication, meetings and reports ( <b>Section 3</b> )	
Records of site inductions and tool box talks ( <b>Section 3</b> )	
Records of communication with SEPA, SNH, etc. ( <b>Section 3</b> and <b>5</b> )	
Eco Map ( <b>Section 4</b> and <b>10</b> )	
Records of all environmental checks / inspections ( <b>Section 5</b> )	
COSHH documentation ( <b>Section 5.3</b> )	
Site Waste Management Plan and related information ( <b>Section 6</b> )	
Environmental Mitigation and Drainage Register ( <b>Section 7</b> )	
Geotechnical Risk Register ( <b>Section 7</b> , <b>Section 14</b> )	
Records of water quality monitoring ( <b>Section 8</b> )	
Excavation Register ( <b>Section 14</b> )	

**Note: The above list only relates to requirements of this CEMP. Additional submissions will be required from the *Contractor*, e.g. submissions to satisfy other parts of the Contract.**

## PART 2 – OUTLINE CONSTRUCTION METHODS

### 18 INTRODUCTION

18.1.1 The following sections describe the general methods of construction which are stipulated in the *Employer's Civil Technical Requirements* generally included in the *Civils Work Contract* forming the basis for the *Contractor's* detailed design.

#### 18.2 General Construction Detail

18.2.1 The proposed construction works entail the realignment of the B9075 (Sandwater Road) between the junction at A970 at Sand Water, westwards to the junction with the C class road to Upper Kergord. Upon completion of the wind farm construction, the track would be upgraded to public road standard, tied back into the existing B9075 to the east of the existing Burn of Weisdale crossing and, finally, adopted by Shetland Island Council (SIC). In addition to this a new single span bridge structure over the Pettawater Burn and two further new junctions (one to the Mid Kame Ridge, and the other to the proposed new Kergord Access track), would also be adopted by SIC.

18.2.2 The section of track to be adopted as the new B9075 requires a two stage design comprising a temporary track to facilitate wind farm construction, followed by a permanent road built in accordance with SIC specification. The works to achieve adoption by SIC would include re-profiling to achieve the permanent alignment, surfacing, and instalment of permanent road features such as signage.

#### 18.3 Working Hours and Noise

18.3.1 Construction activities will generally be stipulated as part of a planning consent, normally limited between 07.00 and 19.00 hours Mondays to Fridays, and 07.00 to 13.00 hours on Saturdays, with no working activities on Sundays. In the event of work being required outwith these hours, e.g. abnormal load deliveries, commissioning works or emergency mitigation works, the Planning Authority will be notified prior to these works taking place, wherever possible.

### 19 SITE ACCESS CONSTRUCTION

#### 19.1 Signage

19.1.1 Sufficient signage will be employed on site, for both site personnel and the public, to clearly define the boundary of the works where they coincide with areas accessible to the public.

19.1.2 Ecological awareness signs (e.g. potential otter crossing) are also required at speed limit signs in certain areas of the site.

### 20 ONSITE PREPARATORY CONSTRUCTION

#### 20.1 Introduction

20.1.1 The *Contractor* and any subcontractors will be familiar with, and take account of, the planning conditions relevant to the construction works and the requirements of the CEMP prior to construction work commencing.

- 20.1.2 Prior to the works commencing at site, a pre-condition survey of any existing tracks and associated field boundary features (fences, walls and gates) will be undertaken by the *Contractor* in conjunction with the *Employer* and landowners, where appropriate, to visually record the existing conditions. This will entail the preparation of a Pre-condition Survey Report, which will include text, diagrams and photographs clearly referenced to the locations at site.

## 21 ROAD CONSTRUCTION

### 21.1 Introduction

- 21.1.1 The overall site design has been developed in accordance with engineering good practice and in consultation with Shetland Island Council Infrastructure Services and reflects the requirements and specifications for transporting wind turbine components to the associated wind farm.
- 21.1.2 The extent of construction disturbance will be limited to around the perimeter of, and adjacent to the road alignment, including associated earthworks, and shall be monitored by the ECoW and ACoW as required.
- 21.1.3 The proposed road alignment will be inspected by the *Contractor*, ECoW and ACoW prior to the on-set of construction in each section. The regularity of inspections (hourly, daily, weekly, as appropriate) during the construction period shall be determined in advance for each particular stretch, based on anticipated ground conditions, known ecological or archaeological sensitive receptors, prevailing weather conditions, and anticipated rate of progress.
- 21.1.4 In general, as part of the design mitigation wherever practicable all proposed site infrastructure has been sited at least 50m from any watercourse (with the exception of watercourse crossings).

### 21.2 General Construction Criteria

- 21.2.1 During construction of the wind farm, maintenance of the running surface will be carried out on a regular basis, as required, to prevent undue deterioration. Loose track material generated during the use of the road by wind farm traffic will be prevented from reaching watercourses by maintaining an adequate cross-fall on the tracks and suitable drainage mitigation. Periodic maintenance of the road by way of brushing or scraping will be carried out to minimise the generation of wheel ruts. In dry weather, dust suppression methods may be required. The site access tracks and associated drainage system will be inspected on a daily basis by the *Contractor*. Records of such inspections will be held on site for review by the ECoW / *Employer*.
- 21.2.2 Where floating sections of road are constructed, the contractor will denote this on the site 'as built' drawings.

### 21.3 Unstable Ground

- 21.3.1 Unstable ground is herein considered to be any ground conditions encountered along the proposed alignment, or within the immediate vicinity and influence, of the road that has insufficient strength in its existing state to support the proposed load conditions or to remain *in-situ* for the duration of the construction works, or that has experienced natural failure (i.e. not as a consequence of construction works) prior to, but along the alignment of, or within the immediate vicinity and influence of, the proposed road alignment such as to require re-alignment of the works, or major civil engineering solution to maintain the proposed alignment.

21.3.2 If any unstable ground is encountered during road construction, the following procedure shall be adopted:

- Construction in the immediate area of the unstable ground shall cease with immediate effect;
- The *Contractor* immediately consults the *Employer*; and
- If relocation of the proposed road alignment is possible and acceptable to the Shetland Island Council (SIC) and ECoW/ACoW (as appropriate), without potential for further ground instability to occur, then construction may recommence along the newly agreed alignment, and any stabilisation / mitigation measures that may be required of the unstable ground shall occur in parallel.

## 21.4 Founded Road Construction

21.4.1 The road will be founded on suitable underlying material (soil or rock with sufficient bearing capacity) in the following manner:

- Stripping of surface vegetation (turves) and careful stockpiling of this material as per CEMP requirements.
- Excavating the remaining superficial soil materials (overburden) and stockpiling this material as per CEMP requirements.
- Where different overburden materials are present these will be stored according to type. This material will be retained for reinstatement purposes.
- The exposed suitable track formation shall have rock fill material tipped from dumper trucks directly onto the proposed access track alignment; and
- This material will then be either spread by a dozer or placed by a hydraulic excavator and compacted in layers, typically using vibratory rollers.

21.4.2 Turning areas will be formed to facilitate the turning of dumper trucks. These turning areas can serve as passing places during the construction period before being reinstated at the end of the works using subsoil/topsoil.

## 21.5 Floated Road Construction

21.5.1 In accordance with good practice, over deep peat sections (typically where thickness exceeds 1m) and where engineering standards can be achieved, floating tracks are used to remove the requirement for peat excavation and limit disruption of hydrological pathways. The success of construction requires careful planning to take account of the unique characteristics of peat soils. Specific guidance<sup>5</sup> is available on floating road design, duration and timing of construction, sequence of construction and the reuse of peat on trackside embankments.

21.5.2 The following factors shall be considered during detailed design of floating roads:

- adopting conservative values for peat geotechnical properties during detailed design

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<sup>5</sup> Floating roads on peat (SNH, FCS; August 2010);

(post-consent);

- on gently sloping ground and where the access track runs transverse to the prevailing slope, natural hydrological pathways such as flushes and subterranean flows shall be accommodated via cross drains and a porous track construction;
- ensuring transitions between floating tracks and excavated tracks (or other forms of track not subject to long term settlement) are staged in order to minimise likelihood of track failure at the boundary between construction types;
- scheduling access track construction to accommodate for, and reduce, peat settlement characteristics; and
- reuse of existing roads (with upgrading if required), where possible.